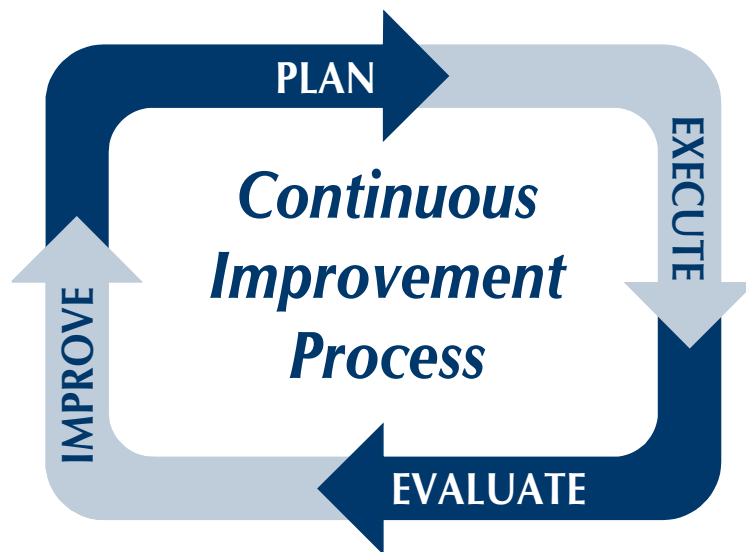


BBL Quality Management Plan

August 2003



Getting from Better to Best

Corporate Quality Manager: Robert A. Reed Date: 8/13/03

Corporate Quality Officer: [Signature] Date: 8/13/03

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Quality Policy and Principles

At Blasland, Bouck & Lee, Inc., we have established a Quality Policy and 12 Quality Principles that form the basis of the Firm's continuous improvement activities. The policy and principles are available on the corporate Intranet and are provided below.

QUALITY POLICY	<p>Continuous Improvement is the basis of our mission to be the “unparalleled provider” of service to our clients. We provide services in a manner that identifies and focuses on each of our client’s requirements and expectations. These quality objectives are met by building value-added improvement activities into each and every work effort, not by simply adding quality-related tasks to our normal day-to-day activities. Resources are provided to achieve our quality goals, including but not limited to developing and implementing training programs and Quality Program assessment activities.</p>
QUALITY PRINCIPLES	<ul style="list-style-type: none">• Quality is the responsibility of all employees, who must strive for continuous improvement, building quality into every activity to produce the unparalleled services our clients expect.• All work activities must be planned based on the client’s needs, taking into account quality goals, and applicable technology and regulatory requirements.• Personnel must be qualified to implement the work activities to which they are assigned. Objective evidence of qualifications must be established and maintained.• Procedures must be developed, documented, and approved for project activities. All such work must be performed and documented in accordance with the approved procedures.• Activities involving the acquisition of data must be planned and documented in order to identify the type, quality and quantity of data needed for the intended use.• The procurement and use of materials, equipment, and services that affect the quality of the Firm’s (defined on page 1-1) work must be planned and managed, and must conform to applicable contract, technical, and regulatory requirements.• All designs, plans, specifications, and other documents must be developed using sound engineering and scientific principles, and must meet appropriate industry standards. All designs, plans, specifications, and other documents must be reviewed, verified, and approved prior to issuance.• Complete, accurate, and up-to-date records must be prepared and maintained for all project and program activities.• Sampling, measuring, and testing equipment must be maintained and calibrated in accordance with manufacturer’s recommendations and industry standards. Calibration and maintenance records must be maintained.• Computer software and computer hardware/software configurations used in engineering, scientific, and accounting programs must be managed, maintained, and documented.• Deviations from planned project activities must be documented and reported to management as they occur. The significance of a deviation on the project must be determined and appropriate adjustments must be made.• Engineering, scientific, and construction activities will be periodically evaluated to verify conformance with quality, technical, and regulatory requirements.

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1. Quality Management System

Blasland, Bouck & Lee, Inc. (BBL) and its affiliated companies (collectively, the “Firm”) have established a Quality Management System that promotes continuous improvement in the quality of our services. As such, the Firm has established a Quality Management System through which critical-to-quality needs are defined, appropriate resources and personnel are applied, effective procedures are implemented, and other processes for continuous improvement are planned, executed, evaluated, and improved, as needed. Through the effective application of our Quality Management System, the Firm strives to provide services that meet or exceed client expectations and regulatory requirements.

The purpose of this Quality Management Plan is to identify the scope of the Firm’s Quality Management System and to describe how our processes, people, and resources interact within the system to continuously improve our services.

Collectively, the information and policies identified in this document are referred to as the Quality Management Plan (QMP). The purpose of this plan is to identify the scope of our Quality Management System, describe the sequence and interaction of the processes included in the Quality Management System, and identify the policies of our documented procedures. This QMP and associated processes define and communicate the necessary organizational functions and interrelations within the Firm, including responsibilities and authorities for implementing, monitoring, and enforcing our Quality Management System.

This QMP applies to the full range of activities performed by the Firm, whose employees are committed to providing quality services (e.g., reports, letters, work plans, designs and specifications, advice and opinions, data) to our clients. Many of the Firm's activities involve collecting and evaluating data; designing, constructing, and operating systems; and providing management consulting services. The activities that affect quality must consistently meet the intended use, purpose, or scope of work; meet or exceed client expectations; comply with regulatory requirements; be conducted safely; and respect cost considerations.

Our Quality Management System is based upon the core principles of continuous improvement and is guided by national and international standards, including but not limited to:

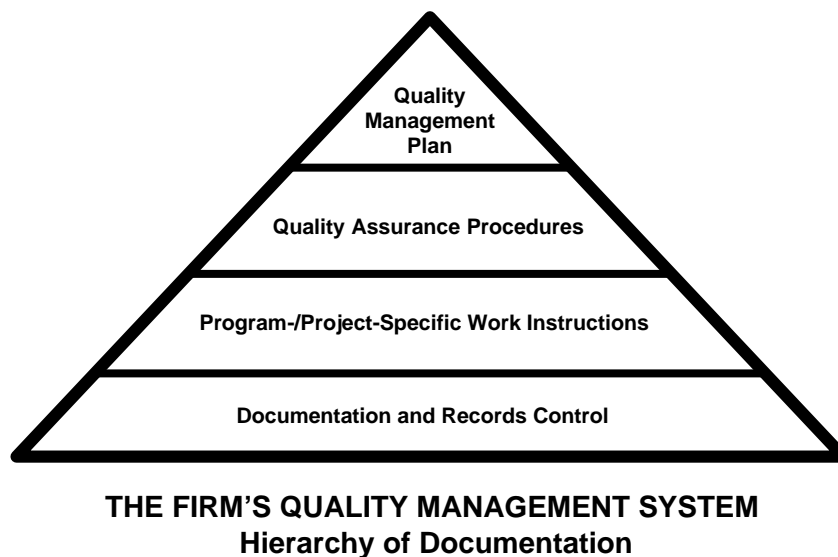
- USEPA QA/R2 – Requirement for Quality Management Plans;
- ANSI/ASQ E-4 – National Standard for Environmental Management Systems; and
- ISO 9001:2000 – International Standard for Quality Management Systems.

1.1 Continuous Improvement

At the heart of our Quality Management System is our Continuous Improvement Process (CIP), a mechanism to achieve continuous improvement in all of the Firm’s services. This process permeates every aspect of our Quality Management System as we strive to fulfill all of the Quality Principles under the Firm’s Quality Policy. Our CIP involves four primary stages:

- **Planning** activities, designed to identify the processes needed to provide services and produce deliverables, and to determine the sequence and interaction of these processes;
- **Execution** methods provide effective control of these processes and the information necessary to support the work activities;
- **Evaluation** methods measure, monitor, and analyze these processes; and
- **Improvement** activities implement actions to achieve planned results or improve processes in an effort to sustain continuous improvement.

1.2 Documentation of the Quality Management System



- **Quality Management Plan** – Occupying the top of the pyramid is this QMP, which declares a core set of policies, procedures, and management responsibilities for developing, executing, and monitoring the Quality Management System as it is applied across the Firm's entire collection of services. This QMP is a living document and reflects the current quality program approach undertaken by the Firm. The Corporate Quality Manager (CQM) is directed by the Corporate Quality Officer (CQO) to prepare, regularly assess, and update this plan to reflect ongoing changes and improvements based upon the Firm's continuous improvement efforts. Senior-level managers of the Firm are ultimately accountable for this plan, mission accomplishment, and ensuring that the QMP satisfies all US Environmental Protection Agency (USEPA) policy requirements. The CQM, CQO, Legal Counsel, President, and Chief Executive Officer are responsible for approval of the QMP.
- **Quality Assurance Procedures** – Based on the type of services and guided by the Firm's Quality Policy and Quality Principles, the next tier in the system comprises the quality assurance procedures (QPs). The QPs set forth specific policies and requirements for those common processes identified as having the most significant impact on the quality of our Firm's services. They are designed to inform and instruct employees, and are designed to meet USEPA's QA/R-2 requirements. Selecting appropriate and applicable QPs is a management function, resulting in activities that are of the type and quality needed and expected by our clients. QPs are maintained in a central file on the corporate Intranet and are made readily available to all employees.

The Firm's Quality Assurance Procedures provide "best practice" guidance and are designed to meet EPA QA/R-2 requirements.
- **Work Instructions and Standard Operating Procedures** – The next tier in the system focuses on the project- and program-specific work instructions that promote and guide the delivery of quality services to our clients. These detailed instructions and standard operating procedures (SOPs) are developed and managed both at a corporate level and project-, program-, or client-specific level. Through these detailed

Refer to QP 1.01 for information regarding the control of QPs.

work instructions, the Quality Management System accommodates the wide array of the Firm's services and the equally wide variety of circumstances under which those services are delivered. In this way, the system remains consistent yet flexible for program-, project-, and client-specific activities (procedures and work instructions) that are applicable to each work effort.

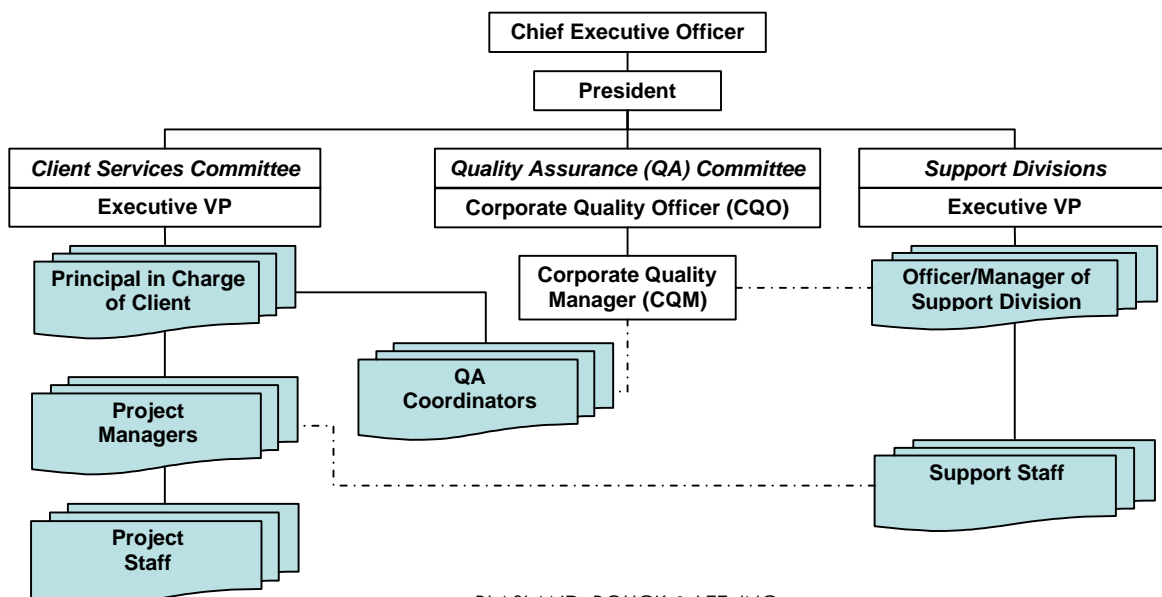
- **Documentation and Records Control** – Finally, the Quality Management System is grounded in specific methods and responsibilities for documenting all aspects of the program, including a document and record management procedure. Documented procedures are approved and updated by appropriate personnel, as necessary, prior to issuance. The current revision status of each document is identified, relevant versions of applicable documents are available at points of use, and all documentation remains legible, readily identifiable, and retrievable. Measures are in place to prevent the unintended use of obsolete documents and to suitably identify them if they are retained for any purpose. Documents of external origin are identified, and their distribution is controlled. Records required for the Quality Management System are maintained to provide evidence of conformance to requirements, as well as evidence of effective operation of the Quality Management System.

Refer to QP 1.02 for more information on documentation and records management.

1.3 Management Responsibility and Commitment

The Firm's management is committed to implementing and improving the Quality Management System. This is demonstrated by setting an example and communicating the importance of meeting client, regulatory, and legal requirements. It is management's responsibility to maintain an atmosphere in which all employees strive to provide quality services and continuously improve. Although managers at the corporate, divisional, and project levels lead the implementation of the Quality Management System, quality is the responsibility of all employees. The management and all employees of the Firm work as a team to build quality into every project and to deliver the unparalleled services our clients expect. As needed and appropriate under this QMP, senior management delegates authority and independence to management personnel and staff, and provides measures to verify that the Quality Management System is understood and implemented by all levels of employees.

Although management provides leadership in implementing the Quality Management System, quality improvement is the responsibility of all employees of the Firm.



- **Organization** – The abbreviated corporate organizational chart (above) illustrates the senior management positions responsible for the Firm’s Quality Program, including the role of the CQO. The Firm’s CQO and CQM have the responsibility for overseeing and verifying that processes of the Quality Management System are established and maintained. The CQO and CQM report to senior management on the performance of the Quality Management System and the needs for improvement. The CQO, CQM, and senior management are responsible for promoting awareness of quality requirements throughout the Firm.
- **Management Review** – Working closely with the CQO and CQM, the Firm’s senior managers regularly assesses the adequacy of the Quality Management System, identify appropriate actions resulting from these assessments, and verify that corrective actions are completed in a timely manner. Factors that hinder the Firm from meeting quality objectives are identified and corrected in a timely manner. For example, at least once each year (or more frequently, as deemed necessary by senior management) the Quality Management System and this QMP are reviewed and appropriately updated to reflect changes in the Firm, as well as changes in policies and procedures.

Refer to Section 4.2 of this QMP and QP 4.05 for the procedural aspects of management review.

- **Roles and Responsibilities** – The following table briefly summarizes the key quality-related roles and responsibilities of management and staff in implementing the Quality Management System.

Summary of Roles and Responsibilities	
Personnel	Primary Role in Quality Management System
Senior Management	Accountable to clients, the Firm’s Board of Directors, staff, and shareholders. Responsible for promoting, executing, and performing management review of all policies identified in this QMP.
Corporate Quality Officer	Accountable to senior management. Responsible for guiding the Firm in the development, execution, and improvement activities associated with this QMP.
Corporate Quality Manager	Accountable to the Corporate Quality Officer. Responsible for managing the Firm’s efforts in the execution of this QMP.
Quality Assurance Coordinator	Accountable to the appropriate Principal-in-Charge (PIC). Responsible for acting as liaison between the CQM/CQO and the client-specific activities that he/she is responsible for.
Principal-in-Charge (PIC) of Client	Accountable to the client and senior management. Responsible for promoting and executing appropriate and applicable processes identified within this QMP.
Project Manager (PM)	Accountable to the PIC. Responsible for understanding all processes identified in this QMP, for identifying all applicable processes for use on his/her project, and for communicating and verifying that all project team personnel are following documented processes.
Staff	Accountable to the Project Manager and individual supervisor. Responsible for performing activities in accordance with stated processes identified within this QMP.

The Firm's senior managers are committed to providing the resources required for the effective planning, execution, evaluation, and improvement of services and work procedures under our Quality Management System. Such critical-to-quality resources include, but are not limited to, human resources, training, and facilities, as described below:

- **Human Resources** – It is the Firm's policy that personnel be qualified to implement the work activities to which they are assigned. Objective evidence of qualifications is established, maintained, and evaluated. Personnel who are assigned responsibilities defined in the Quality Management System are competent on the basis of applicable education, training, skills, professional licensing, and experience. A performance evaluation is performed annually for all staff. Managers are responsible for continually identifying additional skills needed by personnel performing activities affecting quality. Education and/or training are provided to fulfill these needs, and the effectiveness of this training is evaluated by management. Supporting feedback is provided from appropriate project management personnel. Managers are also responsible for identifying retraining needed for their personnel. Appropriate education, experience, training, licensing, and qualification records are maintained.

Refer to QP 1.03 for information regarding the resource coordination process.

- **Education/Training** – It is the Firm's policy to provide the education and training needed by each employee to perform his/her work activities, and to encourage all employees to actively participate in career-building education and training programs. This is achieved by providing a balanced, continuously improving, and interactive education and training program for all employees to enhance personal growth, technical knowledge, and client focus.

Training needs are identified through individual competency evaluations. These needs are addressed through corporate-directed programs. The Firm requires specific levels of training and education for each employee depending on his/her position and role. Quality-specific training for employees is provided annually. After completing the training, employees are required to complete an evaluation to assess the relevance and effectiveness of the training. Education and training records are maintained for each employee.

Refer to QP 1.04 for information regarding education and training.

- **Facilities** – Human and physical factors of the work environment, including workspace, associated facilities, equipment, hardware, software, and supporting services, are identified, provided, and maintained to promote quality services and the continuous improvement of those services.

2. Planning Activities

Planning activities begin with identifying client requirements and establishing quality objectives for these requirements. Additional activities include identifying applicable QPs (or the need to develop one or more new QPs) and providing the resources and facilities specific to client requirements.

Applicable QPs identify the processes needed to meet or exceed client requirements, and to review, verify, and validate the activities appropriate to each design and/or development stage, as well as the responsibilities and authorities for these activities. Interaction between different groups involved in planning, design, and development is actively managed to promote the effective communication and understanding of responsibilities. As activities progress, planning activities are updated as part of the CIP.

Our ability to meet and exceed client expectations is dependent upon successfully planning and executing projects. Project planning develops the concept and approach, identifies the client's quality requirements, and provides for continuous improvement through monitoring and evaluation throughout all phases of the project's life.

The Firm's *Project Management Handbook* provides a number of essential tools that aid successful project planning and implementation. Coupled with the Client Quality Plan (CQP), the *Project Management Handbook* is intended to facilitate the consistent application of good planning, execution, evaluation, and improvement practices according to this QMP and associated QPs.

2.1 Project Planning

It is the Firm's policy to successfully plan and execute each and every project, enabling us to meet or exceed our clients' expectations. Projects are planned to facilitate efficient project implementation (from the development of concept and approach through project completion) and to identify the client quality requirements for the proposed work. Each project is monitored for changing conditions throughout all phases of the project and is periodically reviewed to determine whether appropriate steps have been taken to meet project goals and to evaluate the effect of any changes or nonconformances.

Refer to the Project Manager's Handbook and QP 2.01 for information on project planning.

2.2 Procurement of Products and Services

It is the Firm's policy to plan for and then procure all of the goods and services required to conduct our business activities in accordance with fair, ethical, and legal trade practices. Based on sound planning and project management, goods and services are procured when and where needed, in and of the desired quantity and quality, at the lowest possible price, via the most economical shipping methods, and by personnel authorized to execute procurements on behalf of the Firm.

Refer to QP 2.02 for information regarding procurement requirements.

2.3 Control of Changes

It is the Firm's policy that project and scope changes are identified, documented, and controlled; affected personnel are informed; and an evaluation is performed on the effect of the changes on the services provided. The changes are verified and validated, as appropriate, and approved before implementation (approvals for emergency situations will be performed in a reasonable period of time). Results of the review of changes and subsequent follow-up actions are documented.

Refer to the Project Manager's Handbook and QP 2.01 for guidance on controlling project-related changes.

2.4 Control of Measuring, Testing, and Monitoring Devices

It is the Firm's policy that equipment used by the Firm is in the condition required to perform specified activities, maximizing the quality (i.e., accuracy, precision, usefulness) of data collected from these devices. Under the Firm's Quality Management System and according to applicable project-specific Field Sampling Plans (FSPs) and/or Quality Assurance Project Plans (QAPPs), measurements and the measuring, testing, and monitoring devices required for verifying conformity to specified requirements are identified.

Refer to QP 2.04 for information on measuring, testing, and monitoring devices.

2.5 Development of Client Quality Plans

It is the Firm's policy that effective client-focused planning is essential for meeting or exceeding the quality expectations of our clients. As appropriate for the specific needs of the client, the PIC identifies and establishes quality measurements and monitors the most significant client expectations. Each CQP is considered a "living" document and is designed to allow adaptation to changing client requirements and expectations.

Refer to QP 2.05 for information on the content and role of the CQP.

2.6 Proposal Development Process

It is the Firm's policy that all proposal and qualification documents produced by the Firm accurately represent the Firm's ability to provide services that meet or exceed our clients' expectations and that meet applicable regulatory requirements in accordance with the cost expectations of the client.

Refer to QP 2.06 for information on proposal development.

2.7 Computer Information Technology

It is the Firm's policy that all computer hardware and software used for environmental programs undergo a controlled process for acquisition, testing, installation, maintenance, and evaluation. The Firm employs various computer hardware components and software programs in managing its business and in managing and implementing client projects. The Firm's Computer Information Technology (CIT) division is responsible for all computer-related activities, including but not limited to servers, desktops, networks, applications, web technology, and telecommunications. It is the responsibility of the CIT division to test, install, maintain, and control technology hardware, software, and services used by staff.

Refer to QP 2.07 for information on computer information Technology and the management of computer hardware and software. For activities specific to data management, refer to QP 3.09.

3. Execution Activities

Execution activities include the sequence of processes and sub-processes involved in providing services that meet or exceed client expectations. These activities are controlled through information that specifies the characteristics of the service and the availability of work instructions, where necessary. The services provided by the Firm are measured and reviewed at appropriate stages to verify that requirements are met. Evidence of conformity with the acceptance criteria is documented, and records indicate the authority responsible for release of services and/or deliverables. Services and/or deliverables are not released until all the specified activities have been satisfactorily completed, unless otherwise approved by the client.

Quality-related processes necessary for providing services to our clients are planned and managed. These “living” processes not only provide consistency, but also allow for continuous improvement within the framework of the Quality Management System.

- **Review/Verification of Services** – Technical reviews of services, designs, and/or documents are conducted to evaluate the ability to fulfill requirements and to identify problems and propose follow-up actions. Reviews are conducted by appropriate representatives independent of the discipline associated with the activity being reviewed. Results of reviews and subsequent follow-up actions are recorded. Action is taken to verify that the service provided meets the intended goals.
- **Validation of Services or Processes** – Validation confirms that the result of the service meets its intended use. When applicable, validation is completed prior to the delivery or implementation of the service. When this is impractical, partial validation is performed to the extent applicable. Results and subsequent follow-up actions are recorded. Applicable validation includes the qualification of processes, equipment, and personnel; use of defined methodologies and procedures; requirements for records; and re-validation.
- **Client Property** – Care of client property is exercised while such property is in the Firm’s control or use by identifying, verifying, protecting, and maintaining the client property provided for use or incorporation into a deliverable. This may include but is not limited to intellectual property or confidential information. Incidents during which client property is lost, damaged, or otherwise found to be unsuitable for use are recorded and reported to the client.

3.1 Technical Document Process

It is the Firm’s policy that all external documents must fulfill client and applicable regulatory requirements and be technically accurate and legally defensible. The technical document process comprises the specifications and procedures that enable project managers and project staff to plan, execute, evaluate, approve, deliver, and manage documents.

Refer to QP 3.01 for guidance on the technical document process and to the Document Standards Guide for information on proper document formatting and numbering.

3.2 Development and Verification of Figures, Tables, and Logs

It is the Firm’s policy to produce high quality graphic representations of information. Figures, tables, and logs must fulfill client and regulatory requirements and are technically accurate and legally defensible.

Refer to QP 3.02 for information on developing and verifying figures, tables, and logs.

3.3 Preparation of Calculations

It is the Firm's policy that calculations be documented to a degree that a technical peer who may not be familiar with the project can understand the methodology, assumptions, justification, and references used. The goal of the calculation process is to have a minimum of two technically qualified individuals agree that the information presented in the calculation is accurate and is documented in sufficient detail.

Refer to QP 3.03 for guidance on preparing and reviewing calculations.

3.4 Requirements for Field Sampling Plans

It is the Firm's policy that Field Sampling Plans (FSPs) be technically sound and in compliance with applicable regulatory, legal, and contractual requirements. FSPs are prepared using a standard format, are consistent with site-specific project planning documents, and require the approval of the PM prior to implementation.

Refer to QP 3.04 for guidance on preparing and reviewing field sampling plans.

3.5 Documentation of Field Activities

It is the Firm's policy that all field activities be documented to show compliance with projects plans, work plans, and contract terms and to serve as evidentiary records. Documentation of activities must be legible, organized, and complete. All fieldwork documentation includes, at a minimum, project title and number, identification of the specifics of each activity, including the name of the employee performing the activity, and the date and time of the activity.

Refer to QP 3.05 for information on documenting field activities.

3.6 Field Sampling Activities

It is the Firm's policy that field sampling, measurements, and observations are conducted in accordance with approved site-specific planning documents. These activities are documented to provide an evidentiary record and to demonstrate that the activities have been performed properly. Applicable documents include work plans, the Quality Assurance Project Plan (QAPP), the Field Sampling Plan (FSP), applicable standard operating procedures (SOPs), the Health and Safety Plan (HASP), and other appropriate project documents associated with the sampling program.

Refer to QP 3.06 for information on requirements pertaining to sampling activities.

3.7 Construction Inspection and Observation Activities

It is the Firm's policy that construction inspection and observation services be performed in a manner that is focused on client needs while maintaining appropriate risk management.

Refer to QP 3.07 for information on construction inspection and observation activities.

3.8 Development of Design Documents

It is the Firm's policy that all engineering design documents (e.g., engineering and design reports and letters, work plans, contract drawings, technical specifications, performance specifications, and pre-purchase specifications) produced by the Firm be developed under the guidance of and are signed by the state-licensed Engineer in Charge (EIC) for that discipline. The Firm's design projects are performed using appropriately skilled personnel in a "best-team" approach and are technically sound (as defined by the industry standard of care) and developed using the appropriate engineering standards and codes, meet the client's goals and objectives, and comply with all applicable local, regional, state, and federal requirements.

Refer to QP 3.08 for information on developing design documents.

3.9 Data Management

It is the Firm's policy that data management activities follow a common process to establish, meet data quality objectives in compliance with client requirements, and comply with all applicable local, regional, state, and federal requirements. A typical project entails acquisition, interpretation, and management of data.

Refer to QP 3.09 for information on data management.

3.10 Design During Construction Activities

It is the Firm's policy that all engineering efforts during design and construction activities be technically sound, meet the client's requirements, comply with all applicable local, regional, state, and federal requirements, and maintain appropriate risk management.

Refer to QP 3.10 for information on design during construction activities.

3.11 Operation, Maintenance, and Monitoring Activities

It is the Firm's policy to provide our clients with operation, maintenance, and monitoring (OMM) services that comply with applicable regulatory requirements, are conducted safely, and are performed efficiently on a consistent basis. Our goal is to provide value-oriented solutions that provide cost savings, reduced liabilities, and other positive business outcomes for our clients.

Refer to QP 3.11 for information on operation, maintenance, and monitoring activities.

3.12 Determination of Data Quality Objectives and Development of Quality Assurance Project Plans

It is the Firm's policy that data quality objectives are determined for data collection activities in conformance with client requirements, and that quality assurance project plans (QAPPs) be prepared in conformance with applicable federal and state regulations and guidance. The standard QAPP format is consistent with USEPA requirements for QAPPs (EPA QA/R-5) and was developed in accordance with the USEPA guidance for QAPPs (EPA QA/G-5). Data collected or generated by other parties (e.g., data from another consultant or the USEPA) or data collected or generated for other purposes (e.g., data originally collected for site investigation being used as part of a risk assessment) also follows applicable USEPA guidance.

Refer to QP 3.12 for information on data quality objectives and quality assurance project plans.

3.13 Preparation of Quantitative Models

It is the Firm's policy to develop useful and defensible quantitative models using commercially available and accepted modeling tools. These models are used as management and decision-making tools in all of the fields of practice in which the Firm performs numerical or quantitative modeling.

Refer to QP 3.13 for information on the preparation of quantitative models.

3.14 Preparation of Standard Operating Procedures

It is the Firm's policy to develop standard operating procedures (SOPs) that are technically sound, detailed (usually in a step-by-step presentation), and in compliance with applicable regulatory, legal, and contractual requirements. SOPs are prepared using a standard format and require the approval of a technical expert and the Project Manager.

Refer to QP 3.14 for information on the preparation of standard operating procedures.

4. Evaluation and Improvement Activities

Processes necessary for the continuous improvement of the Quality Management System are planned and managed to identify and execute improvement opportunities. Nonconformities and/or services that do not conform to intended requirements are identified, controlled to prevent unintended use or delivery, and corrected. When nonconforming services are detected after delivery or after use has started, appropriate action is taken based on the consequences of the nonconformity. Proposed rectification of the nonconformance is reported to the client, end-user, regulatory body, and others, as appropriate.

Continuous Improvement is facilitated through the use of this Quality Management Plan, the Firm's Quality Policy and Principles, assessment results, corrective and preventive action, employee input, and management review.

4.1 Corrective and Preventive Action

It is the Firm's policy to take corrective action to eliminate any defect from our work activities, and to confirm that the action taken is appropriate to the impact of the problems encountered. Preventive action is taken to eliminate the causes of potential nonconformities to prevent occurrence. A QP exists for identifying nonconformities, determining the causes of nonconformity, evaluating the need for actions to verify that nonconformities do not recur, determining and implementing the corrective and/or preventive action needed, recording results of action taken, and reviewing the corrective and/or preventive action taken.

Refer to QP 4.01 for information on corrective and preventive action.

4.2 Quality Assurance Assessment

It is the Firm's policy to continuously evaluate and improve our Quality Management System. The Firm's evaluation process focuses on three significant areas: external assessments through the use of a Client Satisfaction Survey process; internal assessments composed of internal audits, mini-reviews, and self-assessments; and Quality Management System Assessment through a formal management review conducted at least annually. Assessments of programs, projects, and specific project activities are conducted by appropriate management personnel, individuals involved in the program, and individuals independent of the work.

- **External Assessment** – A client satisfaction survey process is performed annually to solicit client perceptions of the services that the Firm provides.
- **Internal Assessment** – Internal assessment is used to verify that the service activities performed and provided to our clients conform to the intended purpose and requirements defined in the QMP and the related QPs. Three approaches are used to perform internal assessments: internal audits, mini-reviews, and self-assessments. The mini-review approach requires an assessor who has previously participated as an auditor and has successfully completed either an external (e.g., ISO 9001 Internal Auditor) or internal training program, provided by the CQM/CQO.
- **Management Review** – The CQM/CQO annually provide senior management with the combined results of assessments. The activities and results of the Quality Management System are verified for the system's continuing suitability, adequacy, and effectiveness. The review evaluates the need for changes to the organization's Quality Management System, including the quality policy, quality objectives, and procedures. These reviews are recorded.

Refer to QP 4.05 for information on assessment activities.

BBL	TOPIC:		
	QUALITY PROCEDURES CONTROL		QP 1.01
Revision B 04/02/03	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED:
			All

STATEMENT OF POLICY:

It is our Firm's policy that all procedures required for the Quality Management System are documented, controlled, and readily available for use. The Firm has identified the most significant processes that affect the quality of our services and has established standard Quality Assurance Procedures (QPs) designed to inform and instruct our staff.

1.0 Purpose

This QP is intended to guide all staff in the development and control of all QPs used by the Firm. This document has been created:

- to approve QPs for adequacy prior to issue;
- to review, update as necessary, and re-approve QPs;
- to identify current revision status of the QPs;
- to verify that relevant versions of applicable QPs are available at points of use;
- to provide legible, readily identifiable, and retrievable QPs; and
- to prevent the unintended use of obsolete QPs, and to apply suitable identification if they are retained for any purpose.

2.0 Responsibilities

Quality Assurance personnel are responsible for the implementation and control of this QP.

All staff are responsible for following this QP while performing development and review activities identified in this document.

The Quality Assurance Manager is responsible for identifying appropriate document editing needs of QPs and Quality Forms (QFs) and for approving any document editor's input.

3.0 Description of Procedure

The development of new QPs and the revision of current QPs follow an established process:

3.1 Identification of Need

Our Firm continually strives to identify significant processes that require a QP and to refine existing QPs that affect the quality of our services.

3.1.1 New QP:

A need is established for a new QP to guide the performance of a process. This need may be based upon a variety of factors, including common process, client needs, and quality assurance or legal considerations.

3.1.2 Revision to existing QP:

A need is established to revise an existing QP for improvement. This need may be based upon factors such as desired clarifications, procedural issues, or client needs.

Process - Critical Components for the Control of Quality Procedures

- 1. Identification of Need:** to recognize that a procedure should be developed or revised in a consistent and controlled manner.
- 2. Communication of Need:** to inform and receive assistance from appropriate staff
- 3. Appropriate Resources:** to identify individuals who will assist in developing and reviewing new and existing QPs
- 4. Writing QPs:** to write a guidance document that is legible, accurate, and provides added value to a process
- 5. Routing Preparation:** to provide an efficient path for QP approval
- 6. Approval Process:** to perform an effective evaluation of the proposed QP
- 7. Revision Status:** to identify the current revision of a QP

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3.2 Communication of Need

The following Quality Assurance personnel may be contacted for assistance when developing or revising a QP: QA Officer or Manager, a designated Client Quality Assurance Coordinator, the current Procedure Champion, or any member of the Quality Assurance Committee.

3.3 Appropriate Resources

The use of appropriate personnel to assist in and add value to the development or revision of a QP is of paramount importance. The developed/revised QP will provide guidance and direction to all staff involved in performing the applicable process.

3.3.1 New QP:
The Quality Assurance Committee will designate an appropriate Champion to lead the efforts of the QP development and approval process. The Champion will give consideration to involving personnel in the effective development and review of the QP prior to submitting for approval.

3.3.2 Revision to existing QP:
The Champion will consider the nature and significance of the proposed revision when determining appropriate resources and their various levels of involvement.

3.4 Writing QPs

Our Firm applies a common format for documenting our key common processes. This approach provides consistency and common interpretation by all personnel affected by the QP.

3.4.1 New QP:
QF 1.01.01 is used as a template for the development of all new QPs.

3.4.2 Revision to existing QP:
The existing QP master file is used as the basis for all revisions and is located on the corporate Intranet.

As new or revised QPs are being developed, they shall be identified as “DRAFT” in the header of the document.

3.5 Routing Preparation

QF 1.01.02 is used for the approval process. The top section of the form should be completed by the author(s) of the new or revised QP. The form and the QP are then submitted to the Quality Assurance Manager (or Quality Assurance Officer) for insertion into the approval process and for selection of the appropriate QP or form category and identification number.

3.5.1 Identification of QPs and QFs

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New and existing QPs will adhere to the following category patterns:

QP 1.XX	Firm-wide Quality System Requirements
QP 2.XX	Planning Activities
QP 3.XX	Implementation Activities
QP 4.XX	Review and Improvement Activities

New and existing QFs will adhere to the following format:

QF 1.XX.YY, where XX is the QP number and YY is the form number. It is the responsibility of the Quality Assurance Manager (or Officer) to assign these values.

3.6 Approval Process

QF 1.01.02 designates the appropriate approvals required for issuances of a QP. Identification of appropriate approval personnel will be controlled on the form. Once final approval is obtained, the "DRAFT" status indicated in the header is removed.

3.7 Revision Status

The current revision of each QP will be provided on the corporate Intranet. Revisions will advance alphabetically (i.e., A, B, C ...Z, AA, AB). Hard copies of any QP may be generated for use, but must be checked against the controlled version located on the Intranet to verify that the correct revision is being followed prior to performing activities. Obsolete revision hardcopies shall be either discarded or identified (stamped or hand-printed) in red ink as "obsolete" on each page of the QP.

4.0 **Related Forms**

QF 1.01.01	Template for Quality Assurance Procedures (QPs)
QF 1.01.02	Routing Form for New and Existing Quality Assurance Procedures (QPs)

- END OF PROCEDURE -

Chief Executive Officer
Authorization: _____

Date: _____

BBL	TOPIC: DOCUMENT AND RECORD MANAGEMENT QP 1.02	
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STATEMENT OF POLICY:

It is BBL's policy to manage all documents in a manner that is consistent with all legal, contractual, and client-related requirements. These documents are managed in an efficient and cost-effective manner throughout each document's useful life cycle and in accordance with applicable law.

PURPOSE OF PROCEDURE:

The purpose of this procedure is to provide a common process for the management of all documents and records acquired or created by BBL.

PROCEDURE DESCRIPTION:

Document and record management includes the identification, numbering, filing, storage, retrieval, retention, disposition, and recovery of corporate documents and records.

This procedure pertains to documents and records in all formats, including paper, microfilm, magnetic tape, optical disk, and electronic files (including business- or project-related e-mail correspondence.) Please note: "Desk" or personal records are excluded from this procedure (see terms and definitions).

Corporate documents and records may be originated by BBL personnel, as well as by external entities, such as clients, other consultants, subcontractors, regulatory agencies, third-party benefit providers, insurance underwriters, claimants, leasing agents, utility service providers, property managers, or any of a number of other sources.

Categories of documents that fall under this procedure include:

- Project;
- General Client and Marketing;
- Legal;
- Human Resources;
- Education and Training;
- Finance; and
- Other Vital Records.

Process - Critical Components For Effective Document Management

1. **Identification:** to recognize that a document or record will need to be managed and whether it should be considered to be a Privileged and Confidential document.
2. **Numbering:** to name an electronic file produced by BBL to facilitate tracking and retrieval.
3. **Filing:** to identify, protect, duplicate, and maintain BBL's vital records.
4. **Storage, Retrieval, and Retention:** to remove inactive records from office areas and secure them in economical, and conveniently located, off-site storage locations. To document and communicate mandated or recommended document retention and disposal requirements in compliance with legal, fiscal, and administrative requirements and guidelines.
5. **Recovery:** to recover or reconstruct corrupted, damaged, lost, stolen or accidentally destroyed documents or records.
6. **Disposition:** to document the destruction of obsolete records in compliance with legal, financial, and administrative requirements and guidelines.

1. Identification

Whenever a document or record is generated or received, it must be determined whether or not it should be managed and whether or not the document is considered "Privileged and Confidential." Further information/clarification regarding "Privileged and Confidential" documents may be found within the contract, Client Quality Plan, or specific Project Plans, or be obtained from a client-team management member or the Legal Division. All documents designated "Privileged and Confidential" shall be clearly marked as such. If it is determined that the document or record should be managed, this Quality Procedure must be followed through the life of the document.

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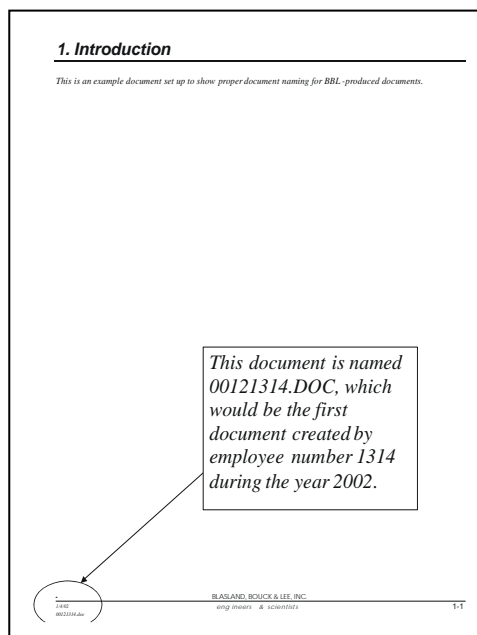
When an externally originated document(s) is received, including documents received by facsimile, the documents(s) must be clearly marked or stamped as “RECEIVED” and must be dated prior to filing. Original documents that should not be stamped on the front page may be stamped on the reverse side. (A “RECEIVED” stamp is available through your AA/ES.)

2. Numbering

All computer generated documents produced by BBL (e.g., correspondence, memos, reports, proposals, qualifications, specifications, tables, agreements, work plans) must reflect a file number and date in the document footer. Please refer to BBL’s *Document Standards Guide* (refer to the corporate Intranet) for details on document numbering.

3. Filing

Project-related documents must be maintained by the office and owning division that manages the project. Original copies of all other business-related documents and records must be forwarded to the Management Services Group responsible for the coordination of such business activity. It is BBL’s intent that a document management standard be applied to all corporate documents and records to permit efficient file retrieval, to easily consolidate records, and to facilitate the verification of this procedure through audits and self-assessments.



The location and organization of all retained corporate documents and records within any given file system shall be clearly displayed and obvious to all potential users. File reference lists shall be developed to identify corporate documents and records retained at each on-site and off-site location. The owning division must maintain the master copies of all documents. The division AA/ES or Records Clerk shall update these record inventory reference lists immediately upon any changes to the list. File inventory reference lists shall be kept at the beginning of the file to facilitate the retrieval of documents and records. Information on project-related material stored elsewhere must be included with the file system inventory list. In addition, file cabinet drawers and other record storage containers must be labeled in sufficient detail to identify file contents.

All e-mail correspondence must be controlled and maintained based upon at least one of the following approaches:

- Personnel are to control e-mail in client- or project-specific electronic folders within each user’s e-mail tool;
- Controlled in an alternate location as directed and documented by the appropriate Project Manager; or
- As specified by the Client.

A. Project Files

Client project files and associated documents must be maintained by the project’s owning division and organized according to the corporate filing system outlined below.

- Files should be obtained from or returned to the AA/ES of the owning division for that project. All support divisions must send a copy of all incoming or outgoing documents (e.g., correspondence, memos, reports, drawings, invoices, agreements) to the AA/ES of the owning division for the purpose of maintaining a complete permanent record.
- Documents should be filed in chronological order, with the most current document in the front of the file.

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File Folders: File folders should be created for every project, and labeled according to the 12 types of standard files listed below. A file label template (in Microsoft Word) to facilitate the proper labeling of these files is available on the corporate Intranet. After these file folders have been created, any number of file folders can be added, depending upon the requirements of the particular project.

Large computer output (such as boxes of analytical data or drawings) may be stored outside the project file, but the project file index must reference the existence and location of the computer output.

The 12 standard files are named and numbered as follows:

File Number	File Name	Sample Contents
#1	Agreements/Proposals	Subcontractor Agreements, Client Contracts, PA Forms, Proposals, Letter Proposals
#2	Change Orders/Purchase Orders	Change Orders, POs, Work Variances
#3	Invoices	BBL-Produced Invoices, Invoice Cover Letters, Subcontractor Invoices
#4	Project Management	Project Plan, Organizational Charts, Team Directories, Mailing Lists, Project Schedules, Calendars, etc.
#5	Correspondence	BBL-produced Letters, Agency Letters, Client Correspondence, Subcontractor Correspondence, BBL-Produced Memos, Other Memos, Meeting Minutes, Agendas, Phone Logs, E-Mails, Conversation Records, etc.
#6	Notes and Data	Daily Logs, Field Notes, Site Photographs, Analytical Data and Tables, Drawings, Blue Prints, Modeling Data, GIS Output, Surveying Info, etc.
#7	Public Relations Information	Newspaper Clippings, Press Releases, Community Newsletters, Web Articles
#8	Regulatory Documents	Permit Applications, Permits, Records of Decision (RODs), Consent Decrees, Administrative Orders of Consent (AOCs), Unilateral Administrative Orders (UAOs), Statements of Work (SOWs), Federal Registers, etc.
#9	Marketing Documents	Marketing Brochures, Marketing Letters, Qualifications, etc.
#10	Final Reports/Presentations	Final Reports and Presentations produced by BBL.
#11	Draft Reports/Presentations	Draft Reports and Presentations (works in progress) produced by BBL.
#12	Documents Prepared by Others	Draft and Final Reports, Presentations, and other Documents produced by another organization, such as Agencies, Clients, Subcontractors, other Consultants, etc.

Deviations from the Standard Filing System: Deviations from the standard filing system outlined above are allowed to meet client and/or legal requirements. Deviations must be approved by the project management team and the Legal Division, documented, posted on the file cabinets where these files are stored, and communicated to the Records Officer.

File Labels: A template (in Microsoft Word) is available on the corporate Intranet for use when generating file labels for this enhanced filing system. Below is an example of what the file label would look like:

Client – Site Name	Client.Project Number
#1 Agreements/Proposals	Range of Date(s)

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For GES-Dekalb (client and project #0201.30186), the file label for the #1 file folder would look like this:

GES – Dekalb	0201.30186
#1 Agreements/Proposals	10/99 – 1/01

Labeling File Cabinets: File cabinets and other storage containers used to house technical project files must be labeled in sufficient detail to identify file contents (please see example below). A file to help produce labels for file cabinet drawers (in Microsoft Word) is available on the corporate Intranet. Contact your division AA/ES for assistance in obtaining or using this file.

Client – Site Name	Client.Project Number
Client – Site Name	Client.Project Number
Client – Site Name	Client.Project Number
Client – Site Name	Client.Project Number
Etc.	

An example of a file drawer label would look like this:

GES – Talbot Falls	0100.01015
GES – Fletcher	0100.01001
GES – DeKalb	0201.30186
Etc.	

When obtaining files, refer to section 4 of this procedure – Record Retrieval.

B. General Client and Marketing Files

BBL frequently gathers various marketing documents and other general client documents for a specific project even before the project is awarded to BBL. In these cases, if no project number has been established for the potential project, the Marketing Communication Specialist will set up a marketing file to house marketing and other documents pertaining to the potential opportunity. Once the project has been awarded to BBL and a project number has been established, marketing and other documents pertaining to the project should be stored in file #9, as described above. These documents should be maintained by the lead division and placed in the client project files. When a project is not awarded, these marketing documents should remain in the marketing file.

Documents created by the Corporate Development Division are tracked electronically. A unique STEM number is assigned to each new proposal or project initiated within the Corporate Development Division. The STEM number comprises an eight-digit or longer file name and a three-digit suffix. The first eight digits of the STEM number follow the format defined in BBL's *Document Standards Guide*. The series of alpha-numeric characters immediately following the first eight digits of the STEM number identify the type of document being stored (e.g., "CVR" represents a cover, "TOC" a table of contents, "x1" is Section 1). The three-digit suffix identifies the software used to create the document. A current list of marketing document identifiers is available by contacting the Corporate Development Division. Access to the Corporate Development Division's on-line scheduling and tracking system is required to ascertain client identity by STEM number. Contact the Corporate Development Division for assistance.

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C. Legal Files

The Legal Division generates and maintains corporate documents and records related to acquisitions, mergers, divestitures, corporate formations, contracts, real estate transactions, insurance, licensing, litigation and collection, legal research, conflicts of interest, and certain employee- or personnel-related documents or records. Records are organized as follows, with access restricted to a “need to know” or “limit of authority” basis.

Type of Document/Records	File Color	Filing Procedure
Administrative & Legal Research	Brown w/Red Labels	Alphabetically by Subject Matter
Client Contracts/Subcontracts/ Other Purchases	Blue, Orange denotes Master Agreement	Alphabetically by Seller
Conflicts of Interest	Gray	Alphabetically by Client Name
Corporate Secretarial Formations/Acquisitions/ Mergers/Divestitures	Yellow	Alphabetically by Legal Entity Name
Forms	Brown w/Green Labels	Alphabetically by Subject Matter, sub-filed by Form Name
Insurance	Purple	Alphabetically by type of policy coverage, segregated by Primary Named Insured, and sub-filed by current policy, expiring policy, correspondence, loss runs, and claims, with additional sub-files assigned as needed. All original bonds are filed in the Vault. Bond documents are filed by record category and sub-filed, in alphabetical order, by surety.
Licensing	Pink	Alphabetically by State, sub-filed by BBL affiliate, sub-filed by type of license or registration, etc.
Litigation/Collections	Green	Alphabetically by Person/Company/Entity Name
Personnel	White	Alphabetically by Employee's Last Name
Real Estate/Other Facilities related Transactions	Red	Alphabetically by State, sub-filed by City, sub-filed by Company

File label formats vary, based upon record category, and are on file within the Legal Division.

D. Human Resource Files

Employee records are filed alphabetically by the employee's last name.

- General files are red and include new hire information, required paperwork (e.g., BBL's Code of Ethical Business Practices Certifications), personal information (e.g., changes of address, copies of licenses, employment verifications), salary information and performance evaluations.
- Benefits files are blue and include medical, dental, flex spending and life insurance enrollment forms, 401(k) enrollment, beneficiary and change forms, and BBL-OPP beneficiary forms.
- Employee medical files, which include information on medical monitoring and personal medical information (e.g., disability paperwork) are in yellow files and are kept in separate drawers from general and benefits files.
- Benefit plan documents are filed alphabetically by provider. Provider billing statements and invoices are filed chronologically by billing period and plan year, within each provider file.
- Applicant records are filed by discipline and sub-filed by month received. Applicant records must be entered into the appropriate Humanic database module prior to archiving. Applicant records are retained as “Active” until entered into the database or for a period of 12 months, whichever occurs last. When an applicant is hired, applicant documents become part of the new employee's personnel file.
- Terminated employee files are kept separate from active employee files (medical information files are still kept separate from the general and benefits files).

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Human Resource (HR) files are confidential in nature and access is restricted to members of the HR Division. Applicant records may be accessed by contacting the recruitment group within the HR division. No duplicate sets of any personnel-related documents shall exist outside of the HR or Legal Divisions, other than:

- documents required to validate employee training or medical clearance as part of a fitness for duty certification;
- documents required to process payroll; and
- documents required to develop employee work experience as part of a corporate resume.

E. Education and Training Files

Records are filed alphabetically by employee last name into two separate files - Education or Training.

- Education and Training records are available on the corporate Intranet. These records are generated and automatically recorded when an individual requests an approval for education and/or training.
- Education and Training history is recorded in employee files in the Humanic database. Historical records are located in BBL's Education and Training files and are available by contacting a member of the division.
- Completion certificates and grades for Education courses are sent to the BBL Education & Training division to be filed into the individual's Education or Training folder.

F. Finance Files

BBL's accounting records are generally segregated into five distinct categories or functional areas: accounts payable, accounts receivable, payroll, employee and other miscellaneous reimbursements, and general business accounting. Filing procedures by document type or record are as follows, with access to "payroll" and "general business accounting" records restricted to a "need to know" or "limit of authority" basis.

Type of Document/Record	Filing Procedure
Accounts Payable	<ul style="list-style-type: none"> • Vendor payments are segregated by BBL affiliate, alphabetically by vendor. BBL check stubs are attached to the front of the Vendor invoice prior to filing. • Credit applications are filed alphabetically by vendor. • Original Bonds are filed alphabetically by vendor, retained in the Vault until 1 year after completion of the Work or final payment, whichever is later.
Accounts Receivable	Numerical order by BBL project number, sub-filed by Agreement and invoices. <ul style="list-style-type: none"> • Prime Contracts/Subcontractor Agreements are filed chronologically, by date of issue, in legal-size file folders. Agreement sub-files are not archived until the project has been closed out. • Client billings are also filed chronologically, by date of issue, in letter-size file folders, by fiscal year. Current year and previous year Invoice files are retained as "Active."
Employee/Other Reimbursements	<ul style="list-style-type: none"> • Employee expense reports are filed alphabetically by employee last name, in chronological order by payroll period. • Other reimbursements/ miscellaneous expense reconciliations are filed in chronological by accounting period. • Cash advance forms are filed in chronological order by date of issue, sub-filed by month and fiscal year.
Payroll	<ul style="list-style-type: none"> • Payroll registers are filed by Payroll Period, segregated by Fiscal Year, in three-ring binders. • Vacation and bonus records are filed alphabetically by employee in three-ring binders. Current year and previous year records are maintained as "Active." • Time sheets are filed alphabetically by the employee's last name, in chronological order by payroll period. Current year and previous year records are maintained as "Active."
General Business Accounting	Alphabetically, by type of record, in three-ring binders, in chronological order by accounting period, as follows: <ul style="list-style-type: none"> • A/R Adjustments; • Bank Accounts (by office, and chronologically by accounting period) • Bank Aging; • Bank Fees & Interest; • Cash Receipts (daily, by accounting period); • Daily Cash Receipts (DCR) LOC Backups; • ESOP Labor & Capital Loans; • Flex Checking; • GL Reconciliation (segregated by affiliate); • Health & Dental; • Regional Office Accounts (ROA); • Report & Funding; • Unapplied Cash Receipts; and, • Wire Transfers (alphabetically by Entity Name);. Current year and previous year are retained as "Active."

G. Other Vital Records

Computer-aided drawings are filed electronically in accordance with CADD Document Management Procedures developed for and implemented by the CADD Division. Access by users outside the CADD Division is restricted. Contact the CADD Division for additional information or help with locating a document. Other vital records, such as

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GIS/Modeling/Surveying documents, are managed within the division executing the work.

4. Storage, Retrieval, and Retention

Storage and Maintenance: Corporate documents and records are retained on-site in BBL's offices, and off-site at project sites, employee home offices (subject to Executive Vice President approval), and storage facilities (e.g., Iron Mountain). All corporate records and documents, regardless of where they are retained, are filed utilizing the standard filing systems described in this procedure. The most current and frequently used records are kept on-site in filing cabinets or other record storage areas. Records accessed less frequently than once per month may be sent to storage and retrieved, as needed. When boxed for off-site storage, these records must be segregated by category and record retention dates. Duplicate copies are to be discarded. Records that are frequently retrieved from off-site storage facilities may be restored to office file storage areas, space permitting, when necessary. Records must be stored in facilities that provide a suitable environment to prevent loss and minimize deterioration, tampering, or damage. Such facilities may have controlled access.

Records retained at off-site locations must be transferred to and integrated with the owning division's files upon completion of the field activity. An inventory of records, prepared in quadruplicate on BBL's Archived Records Inventory form (refer to the corporate Intranet or the Legal Division), must be transmitted with the records. Records must be adequately protected from damage and loss during transfer. If necessary, copies may be made prior to shipment. Filed records may be bound, placed in folders or binders, or otherwise secured.

Record Retrieval: For prompt retrieval of information, project records must be accessible for the period of time stated in BBL's Records Retention Schedule (refer to the corporate Intranet). Contact the appropriate divisional AA/ES when needing assistance. Sign-out sheets and "out cards" are maintained to track file removal and to assist in locating a file that has been removed from the file cabinet or other file storage unit. The sign-out sheet includes the project number (if applicable), borrower's name, title of file(s) removed, and the dates removed and returned. Out cards require insertion of similar information. Copies should be made if records are needed for an extended period of time.

Retention: Record storage times are determined by statute, contract, and regulatory requirements. Retention times may also be influenced by other considerations such as the intrinsic or historical value of the document or record. Detailed client retention requirements, when required, are documented in Client Quality Plans or Project Plans. **Please note that no final issue, BBL-generated, project document is to be destroyed without the General Counsel's approval. In the event of pending or threatened litigation, no files may be destroyed regardless of any client directive to the contrary.**

5. Recovery

Recovery or Restoration of Damaged, Stolen, or Destroyed Records: Corporate document or records may become corrupted, damaged, lost, stolen, or destroyed before their useful value to BBL has expired. There are many techniques available to restore, recover, or reconstruct this information. Fans or chemicals can be used to dry documents that have become water-soaked. Historical data that have been stored electronically can be reinstalled to recreate financial reports or CADD drawings destroyed by fire. Tape backups can be used to restore corrupted electronic files.

Document Recovery Assistance: The Corporate Information Technologies (CIT) Division is available to assist personnel with the restoration or recovery of corrupted, damaged, lost, or destroyed documents or records stored on electronic, magnetic, optical, or any other type of computer media. The Legal Division is available to assist with, or coordinate the recovery or reconstruction of, damaged, lost, or destroyed paper documents and records that the CIT Division is not able to restore or recover, typically with the help of third-party vendors who specialize in forensic recovery of business records.

Reporting a Loss: Contact the Legal Division immediately when records are damaged or destroyed as the result of criminal mischief (e.g., computer hackers, disgruntled employee destruction of property) or real property damage (e.g., fire, flood). If

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warranted, police reports will be filed and a claim for cost recovery will be made against BBL's insurance carrier.

6. Disposition

The disposition of records is dictated by BBL's Records Retention Schedule, available on the corporate Intranet.

Destruction of Records: Follow the steps outlined below when destroying records:

- 1.) Review the stored records inventory to identify records eligible for destruction.
- 2.) List the records on a Certificate of Records Destruction Authorization form (refer to the corporate Intranet) and obtain the necessary destruction approval signatures. Use a method of destruction appropriate to the records, such as shredding or burning. Non-confidential or non-sensitive records can be disposed of by recycling or through regular trash removal.
- 3.) Obtain certification from the employee or third-party organization that records have been destroyed, including the date and method of destruction.
- 4.) Establish a regular review and disposal of records, usually at the end of the calendar or fiscal year.

Documents and records in all formats, including paper, microfilm, optical disk, and electronic records, must be destroyed in compliance with this procedure.

Client Notification: Certain BBL clients require notification before any client-related documents are released or destroyed. Care should be taken to determine which requirements apply before releasing or destroying any project-related records. When required, the Legal Division shall develop and obtain fully executed client acknowledgements prior to the release or destruction of any client documents or records.

RESPONSIBILITIES:

	RESPONSIBILITY FOR CONTROL OF CORPORATE DOCUMENTS, BY TASK	ALL EMPLOYEES	LEGAL DIVISION	PRINCIPAL-IN-CHARGE	PROJECT MANAGER	GENERAL COUNSEL	DIVISION AA/ES/SEC.	CORP. RECORDS CLERK	RECORDS OFFICER	INFO. TECHNOLOGIES	LIBRARY RESOURCES
PROCESSING CONTROLLED DOCUMENTS/ RECORDS	Generate/Acquire Records to Document the Firm's Business Transactions and Project-Related Activities	X									
	Identify, Validate, Index (Label), File, and Store Controlled Records	X									
	Purge Obsolete or Superseded Documents Generated or Acquired	X									
	Notify "Need To Know" Personnel of Such Obsolescence	X									
POLICY DEVELOPMENT & IMPLEMENTATION	Develop and Update Records Retention Schedule(s)		X								
	Promote Implementation of QP 1.02		X	X	X	X					
	Assess QP 1.02 for Compliance				X						
	Advise the Legal Division when Corporate Documents Are Discovered that are not Referenced in the Records Retention Schedule(s)						X		X		
	Develop, Approve and Disseminate Changes to File Indexing Systems						X		X		
DOCUMENT/ RECORDS MANAGEMENT	Conduct Records Inventories or Surveys						X				
	Develop and Maintain Current File "Inventories"						X				
	Purge all Division Files no less frequently than Annually						X				

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	Prepare Purged Files for Storage or Destruction						X				
INSURING CONTROLLED DOCUMENTS/ RECORDS	Report Location/Volume of All Archived Records to the Legal Division for Insurance Coverage Purposes						X				
	Obtain Insurance Coverage for Locations and Valuable Records Recovery		X								
	Report any Damage to or Destruction of Controlled Documents Resulting from Criminal Mischief or Real Property Damage (e.g., Fire, Flood, Theft) to the Legal Division	X									
	Report Such Document Loss to Police/Insurance Carrier(s)		X								
DOCUMENT STORAGE & RETRIEVAL	Coordinate Storage of Purged (Archived) Records						X	X			
	Retrieval of Archived (Stored) Records						X	X			
	Preparation of Controlled Document Retrieval /Return Form(s)	X									
	Off-Site Storage Vendor(s) "Point of Contact"							X			
	Preparation of Quarterly Divisional Storage Fee Invoices							X			
DOCUMENT RECOVERY	Assist Legal or Other Corporate Personnel with the Recovery of Damaged or Lost Documents						X	X			
	Assist with Restoration or Recovery of Corrupted, Damaged, Lost, or Destroyed Electronic Media Documents									X	
	Assist with Recovery or Restoration of Damaged, Lost, or Destroyed Paper Documents		X				X	X			
	Assist with Viewing or Recovery of Microfiche Documents										X
RETURN OF CLIENT FILES	Approve Return of Controlled Records to Client(s)		X	X							
	Prepare Controlled Documents for Shipment to Client(s)						X				
	Develop/Obtain Executed Copy of Client Records Release <u>Prior</u> to Release		X								
DOCUMENT DESTRUCTION	Initiate Records Destruction Process							X			
	Prepare Certificate of Records Destruction Authorization Form							X			
	Obtain Necessary Destruction Approval Signatures							X			
	Approve All Requests for Destruction of Controlled Documents					X					
	Obtain Client Releases Prior to Records Destruction		X								
	Maintain Original Copies of Certificate of Records Destruction Authorization Forms		X								

TERMS AND DEFINITIONS:

Active Records - Documents and materials frequently or regularly used to conduct business activities.

Administrative or "Operational" Value - These records are necessary for the day-to-day business operations of your office. Do they establish policy or document operations? Administrative value is usually short-lived. Examples: correspondence, memos and reports.

BBL	TOPIC:		
	DOCUMENT AND RECORD MANAGEMENT		QP 1.02
Revision C (04/09/03)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: ALL	

“Desk” or Personal Records – Documents or records maintained by BBL personnel as reference materials, or for daily usage in the performance of duties for BBL, which do not contain information related to BBL’s business or project-related activities or those documents that quickly become obsolete, losing their retention value. These records may include employee-owned references or manuals, company-issued telephone directories, duplicate copies of BBL’s tiered client lists, pre-printed business forms, GL account lists, A/P vendor IDs, contractor license lists, or other similar types of documents that require frequent updates or do not otherwise meet the definition of a controlled document.

Document - Written or pictorial information that describes, defines, reports, specifies, or certifies activities, procedures, results, or requirements.

Draft - A document that has been reviewed and checked, and is considered a complete work product, but has not been issued by BBL or approved by the Client as the Final version.

“Fiscal” or Financial Value – These records document your office’s fiscal responsibilities, such as the receipt, payment, transfer, adjustment or encumbrance of corporate funds. They usually lose their value once an audit had been approved. However, records that establish or change fiscal policies will have a longer retention. Example: canceled checks, deposit slips, invoices, receipts, and purchase orders.

Historical Value - These records, which usually have a permanent retention, document the history of the government and the community, and constitute only a small percentage of the total volume of records in an organization. These historical, or archival, records contain significant information about persons, places, events, government or corporate organizations, etc. Historical records are valuable because of their age or rarity, such as records of the 18th and 19th centuries. Examples: corporate minutes, resolutions, policies, and annual reports.

Inactive Records - Documents and materials that are not accessed more than twice a year and whose retention requirements have not yet been met.

Legal Value - These records have a mandated retention period by statute or regulation, may be needed as evidence in litigation, or document the rights of citizens or obligations of government. Examples: leases, deeds, titles, contracts, franchises, and court case files.

Permanent Records - Records that have significance or long-term value, such as reports, as-built drawings, design specifications, and field records.

Preliminary - A document for which formal review activities have not been completed.

Records Clerk – Designee to serve as liaison between BBL staff and any third-party record storage facilities hired by BBL.

Records Series - A group or unit of related documents or information that are normally filed or kept together because they relate to a particular subject or function, result from the same activity, or document a particular transaction or activity. For example, correspondence, contracts, ordinances, fiscal vouchers, project files, resolutions, and time sheets.

Records Inventory - Also called a records survey. Data compiled on a form that describes the types of record groups or record series within a container, cabinet, or location. It includes information on the function of the records; their format, use, and volume; and location. An inventory is not a list of individual documents or folders.

Records Management - The administrative process of managing information from its creation or acquisition until its final disposition (i.e., destruction or preservation), preferably in an easily accessible format.

BBL	TOPIC:			QP 1.02
	DOCUMENT AND RECORD MANAGEMENT			
	Revision C (04/09/03)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: ALL	

Records Officer – The designated member of the Legal Division assigned corporate responsibility for developing and maintaining Records Retention protocols, insuring records against loss, assisting with document recovery, and serving as the central repository for collecting and disseminating information regarding BBL’s document retention policies.

Records Retention Schedule - Guidelines that list record series and state what to do with the records—(e.g., how long to retain them, special maintenance instructions, and procedures for records disposal). Retention schedules reflect the length of time that records have administrative, legal, financial, or historical value. Schedules are based on legal and operational requirements, including laws enacted by local, state, or federal legislative bodies; rules and regulations imposed by government and regulatory agencies; the statute of limitations for legal recourse; and judicial or administrative opinions.

Vital Records - Information and materials essential for the continuous operation of an organization. Identifying these records ensures that, in the event of a disaster, the information can be accessed and business operations can resume or continue. Vital records do not necessarily have a permanent retention or historical value.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____

BBL	TOPIC: RESOURCE COORDINATION & QUALIFICATIONS PROCESS QP 1.03		
	DRAFT Revision A (01/11/05)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

DRAFT DOCUMENT – Please provide comments to the Corporate Quality Manager.

This draft document is intended to formalize the existing HR/Resource Development process into a Quality Assurance Procedure.

STATEMENT OF POLICY:

It is BBL's policy that personnel are qualified to implement the work activities to which they are assigned. Qualifications for work activities affecting our clients and the Firm's business needs are established and maintained, and objective evidence of qualifications is evaluated.

Purpose

This quality procedure (QP) provides a common process for identifying, selecting, acquiring, orienting, evaluating, and professionally growing/developing personnel that perform BBL business activities. This process includes:

- determining the need for personnel
- establishing qualifications for that need
- conducting an appropriate search (internal or external) for the candidate
 - internal resource search
 - external search for new hire
- selecting an appropriate candidate
- reviewing and obtaining required training and certifications for the selected individual
- orienting the selected individual
 - project or work activity indoctrination
 - identification of annual performance goals
 - transition of management personnel
 - new hire orientation
- executing work activities by the selected individual
- obtaining and providing for objective evidence of qualifications
 - continuous feedback
 - execution of annual performance review
- continuously improving
 - technical competency
 - professional development and career growth
 - licensing/registration or certification
 - educational opportunities
 - promotion process

The importance of the process cannot be understated, as it covers virtually all facets of an individual's employment life-cycle at BBL. The overriding process includes several sub-processes owned and facilitated by various management services groups and BBL Committees (e.g., Human Resources, Education and Training, Technical Management Committee). Each formal sub-process is identified within this procedure and appropriate information is provided on how to obtain this information.

BBL	TOPIC: RESOURCE COORDINATION & QUALIFICATIONS PROCESS QP 1.03	
	DRAFT Revision A (01/11/05)	SECTION: Quality Assurance Procedure COMPANY LOCATIONS AFFECTED: All

Responsibilities

Principal in Charge (PIC) or Officer – Accountable for the implementation of this QP and for verifying that the Firm is diligent in fulfilling the requirements of this procedure.

Supervisor – Responsible for identifying the need and qualifications of a position, orientation and indoctrination of the employee into the appropriate position, monitoring the day to day work activities of the employee and providing continuous feedback, identifying training needs and professional growth plans, performing the annual performance review, and facilitating the annual goals of the employee.

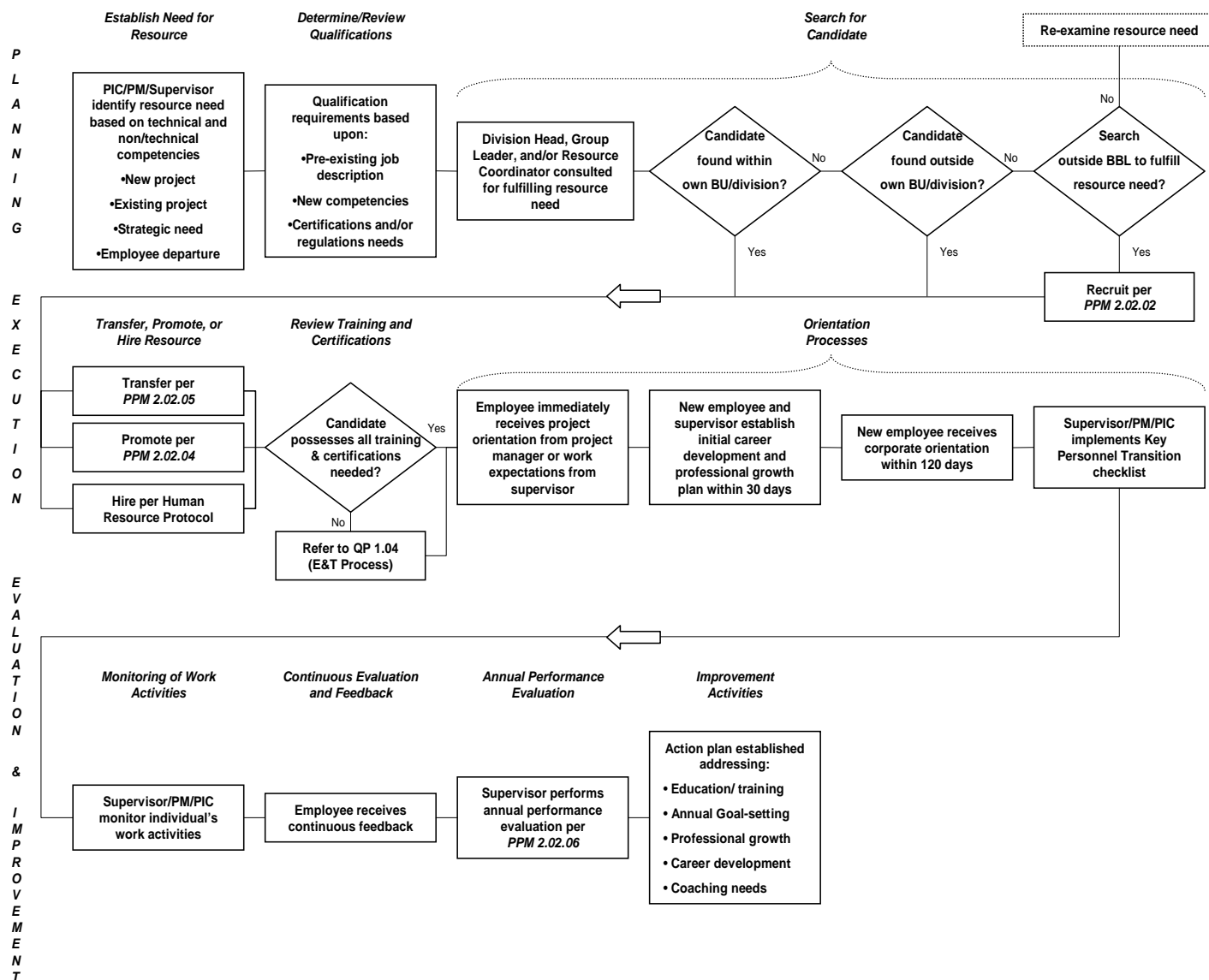
Resource Coordinator – Responsible for facilitating the match of resource needs of BBL to current or potential employees.

Project Manager (PM) – Responsible for identifying the need and qualifications of a project-related position, orientation and indoctrination of the employee into the appropriate position, monitoring the project activities of the employee and providing continuous feedback, identifying training needs, and providing feedback to the individual's supervisor at appropriate times.

DESCRIPTION OF PROCEDURE:

The common process of resource coordination is provided in the following flowchart:

BBL	TOPIC: RESOURCE COORDINATION & QUALIFICATIONS PROCESS QP 1.03		
	DRAFT Revision A (01/11/05)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All



1.0 Planning

Planning activities occur continuously over the course of each BBL project and supporting business units. The most significant personnel planning events occur during the inception and beginning stages of projects or when vacancies occur through normal business activities. Client management, including PICs and PMs, works in concert with appropriate Resource Coordinators and Group Leaders to identify the relevant skills, experience, and the responsibilities needed to achieve the goals established by our clients. Business Unit leaders and Management Services managers also work with the Human Resources division when non-project personnel are required for business activities.

BBL	TOPIC: RESOURCE COORDINATION & QUALIFICATIONS PROCESS QP 1.03		
	DRAFT Revision A (01/11/05)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

1.1 Identification of Resource Needs

1.2 Establishment/Confirmation of Qualifications

Upon the identification of resource needs and the establishment or confirmation of required qualifications, the next step in the process is to select an appropriate candidate for the desired project team or internal staffing need. Candidates are typically sought from within the business unit directly involved with the project activities. If no candidate is available, then contact is made with Group Leaders and Resource Coordinators from other business units. If no personnel are available from this effort, consideration is then given for hiring an individual from outside the Firm.

1.3 Resource Search

- Internal
- External
- Contingency planning

2.0 Execution

2.1 Acquisition of Candidate

- Transfer
- Promotion
- New Hire

2.2 Review of Training and Certification Requirements

2.3 Orientation to work activities

- Project or work activity indoctrination
- Annual Career Growth Plan and Goals
Within 30 days after the start of work, the supervisor will identify and communicate the goals expected of the new employee. These goals will be formally reviewed during the employee's annual performance evaluation.
- New Employee Orientation
- Key Personnel Transition Sub-process and Checklist
Frequently, circumstances will change based on project or corporate requirements, personnel moves, and new opportunities. The manager in responsible charge of the efforts at hand must provide a clear and concise transition plan with/for the new employee(s). The process identified in QF 1.03.01 is used to appropriately address the change in circumstances and effectively communicate the expectations of

BBL	TOPIC: RESOURCE COORDINATION & QUALIFICATIONS PROCESS QP 1.03		
	DRAFT Revision A (01/11/05)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

the activity onto the new individual.

3.0 Evaluation and Improvement

3.1 Monitoring of work activities

3.2 Continuous Feedback

Continuous feedback is paramount to the success of each individual, and to the Firm as a whole. Feedback reinforces expectations and demonstrates that the supervisor/employee relationship is healthy and progressive.

3.3 Annual Performance Evaluation

Employees receive informal performance evaluations throughout the term of their employment. Formal reviews are conducted annually and as necessary. Annual reviews are conducted on an employee's anniversary date unless the employee is a level 1-4. Level 1-4 employees receive their annual performance evaluation on or around January 1 of each year. Managers are encouraged to conduct the performance evaluation meeting within the month preceding the employee's anniversary date or review date.

The annual evaluation is a means for the employee and supervisor to:

- meet formally and discuss the past year's performance;
- validate the effectiveness of internal/external training as it relates to professional and career growth;
- measure performance and accomplishments against short-term (one year) and long-term goals (two to five years out);
- establish new performance goals and objectives;
- mutually agree on training needs consistent with Technical Management Committee (TMC) guidelines for professional competency and career growth;
- retool short term and long term goals; and
- validate any licensing, registration or certification needs or renewals consistent with TMC recommendations.

All performance appraisals require the review and approval of the divisional officer prior to being processed by Human Resources.

3.4 Improvement Activities and Professional Growth

3.5 Professional Growth

- Education and Training
- Licensing and Certifications
- Promotion Process

– END OF PROCEDURE –

Chief

Executive Authorization: _____

Date: _____

BBL	TOPIC:		
	EDUCATION & TRAINING		QP 1.04
Revision A (7/28/03)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED:
			All

STATEMENT OF POLICY:

It is BBL's policy to provide the education and training required by each employee to perform his/her work activities, and to encourage all employees to actively participate in career-building education and training programs. This is achieved by providing a balanced, continuously improving, and interactive education and training program for all employees to enhance personal growth, technical knowledge, and client focus.

Purpose

The objective of this quality procedure (QP) is to provide a common process for identifying and implementing the training activities used to address individual and group competencies for work related to environmental programs.

Responsibility

Project Manager (PM) – The Project Manager is responsible for the identification and verification of the project-related personnel training necessary for his/her project.

BBL Personnel – Each employee is required to follow this procedure.

Education and Training Division (E&T) – The E&T Division is responsible for providing education & training in accordance with this procedure

DESCRIPTION OF PROCEDURE:

1. Overview

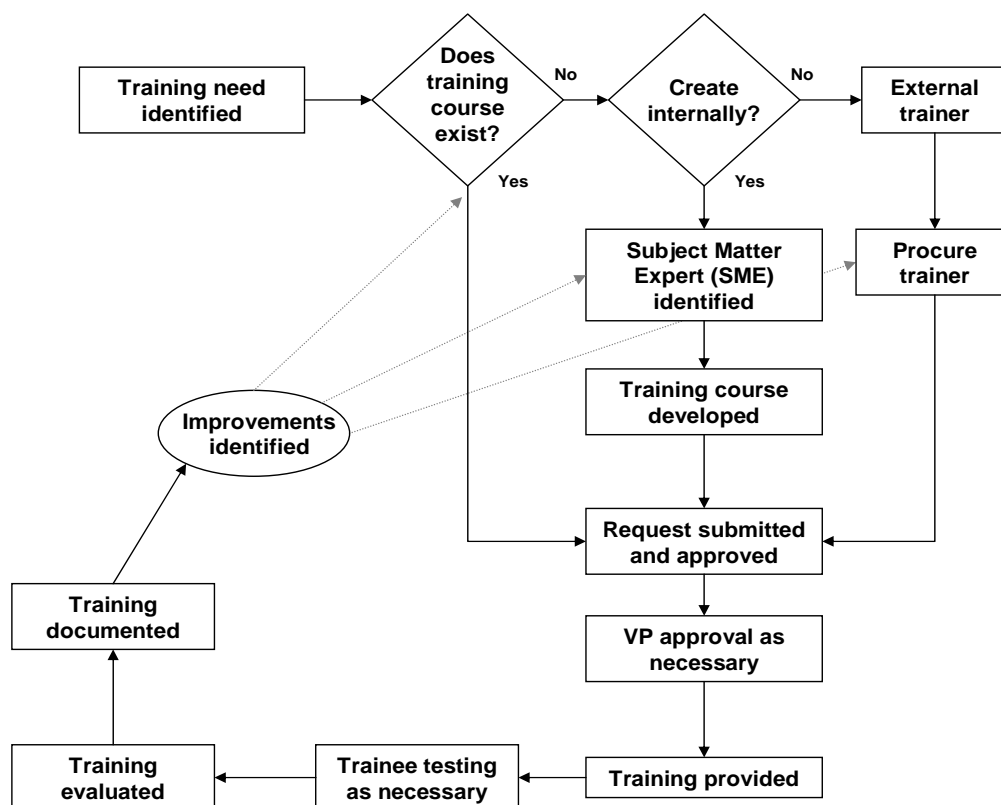
Education and training needs are identified through individual competency evaluations included in QP 1.03 – Resource Coordination Process, available on the corporate Intranet. To engage in training activities and events, employees submit a request for approval of an existing course or request that the E&T Division develop or obtain a new training course. After completion of the training, employees are required to complete an evaluation to assess the relevance and effectiveness of the training. Higher education opportunities are supported through the Firm's tuition reimbursement program, which applies to both degree/certificate programs and individual college-level courses. Education and training records are maintained for each employee.

The E&T Division responds to employee needs with an internal curriculum comprising, but not limited to, employee development, computer skills, health & safety, project management, executive education, and quality. These courses are available in a number of different delivery formats, including online, traditional classroom, self-study, video, and web conferencing, to accommodate employee needs throughout the organization.

2. Training Process

BBL	TOPIC:		
	EDUCATION & TRAINING		QP 1.04
Revision A (7/28/03)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED:
			All

The process of identifying, developing, and providing education and training is depicted in the following flowchart:



2.1 Identifying Training Needs

Training needs identified during normal business activities include:

- technical and non-technical skills or information needed by an employee(s) to perform required work;
- retraining based on changing requirements (e.g., advances in technology, regulatory changes);
- refresher training based on internal/external requirements; and
- retraining based on employee needs.

2.2 Determining How the Training Program Will Be Provided

When training needs have been identified, a determination is made on how the training will be provided. This decision is based on the following options:

- the training course currently exists and is available as part of BBL curriculum;
- training will be created and added to BBL curriculum by an internal Subject Matter Expert (SME). SMEs are personnel identified within BBL that possess in-depth knowledge of a given subject; or
- training will be outsourced to an external vendor, based on a statement of qualifications, interviews, and QP 2.02 – Procurement, available on the corporate Intranet.

BBL	TOPIC:		EDUCATION & TRAINING	QP 1.04
	Revision A (7/28/03)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

Internal trainers (SMEs) at BBL are identified based on their knowledge and presentation skills. Communication and presentation skill training is available for internal trainers. The E&T division works with various SMEs and external vendors to verify that courses include current information and meet BBL standards of quality.

2.3 Request for Employee Training

When a training course is available, the employee submits an online Request/Approval Form to attend. This submittal is linked directly to the employee training/education tracking system. Requests are approved by the employee's officer, with the exception of self-approving courses (e.g., in-house lunchtime presentations, corporate-sponsored sessions), as determined by the E&T Division.

2.4 Implementation

The employee attends the training session and completes an online evaluation. This serves to verify that the employee completed the training and provides an assessment of the relevance and effectiveness of the training. When employees are tested on their knowledge and understanding of the materials presented during a training session, results are filed in employee training records. Available completion certificates are sent to the E&T Division and filed in individual employee training folders.

2.5 Documentation

An online database is maintained with training and education records for every employee, along with hard-copy employee training files for completion certificates and tests. These records are accessible to each individual employee, his/her supervisor and officer, the president, and the CEO. The E&T division maintains all database administrative rights. Files are also maintained for all internal BBL classes with sign-in sheets and completion (pass/fail) statistics.

2.6 Improvement

Training course assessment information is obtained and evaluated by the E&T Division following each training event. If the assessment is below average, the E&T Division will work with the employee to determine a suitable solution. Information is then communicated back to the provider of the training (e.g., Instructor, SME, outside vendor) so that improvements to content or delivery can be implemented.

- END OF PROCEDURE -

**Chief Executive
Authorization:** _____

Date: _____

BBL	TOPIC:		
	PROJECT PLANNING AND REVIEW		QP 2.01
Revision B (12/19/02)	SECTION:	COMPANY LOCATIONS AFFECTED:	
	Quality Assurance Procedure	All	

STATEMENT OF POLICY:

It is BBL's policy to successfully plan and execute each and every project in a way that enables us to meet and/or exceed our client's expectations. Project planning facilitates efficient project implementation, from the development of concept and approach through project completion and the identification of client quality requirements for the proposed work. Projects are monitored for changing conditions throughout all phases of the project's life, and are reviewed to determine whether appropriate steps have been taken to meet project goals and to evaluate the effect(s) of any changes or nonconformances.

1.0 PURPOSE

The objective of this Project Planning and Review procedure is to provide a common process for project planning, execution, and implementation of changes. The project planning process is continuous and includes, but is not limited to, the development of project planning documents, risk management, completion of project reviews, project staffing (including identification of appropriate team members and reviewers), resource allocation, BBL and subcontractor contract execution, identification of changes in scope, completion of document and peer reviews, and completion of self-assessments.

2.0 RESPONSIBILITIES

A. Principal in Charge

The Principal in Charge (PIC) is responsible for guiding Project Managers in the utilization of this procedure, determining project planning approval requirements, identifying the frequency of project self-assessments, and selecting appropriate peer reviewers. The PIC may delegate specific responsibilities to a Program Manager or Officer.

B. Project Manager

The Project Manager is responsible for the execution of this procedure.

C. Project and Support Staff

All project participants who are assigned to conduct, or participate in, project planning and review activities are responsible for complying with this procedure and any project planning documents.

DESCRIPTION OF PROCEDURE:

A. PROJECT PLANNING

Project planning is a continuous process of evaluating project needs based upon client expectations and requirements, legal and regulatory considerations, and sound business practices. It is imperative that the Project Manager consider the following when planning and implementing project activities:

- Client requirements and expectations
- Legal and regulatory requirements
- Scope of project
- Clear task management
- Communication planning
- Procurement of suitable subcontractors
- Application of applicable Quality Assurance Procedures
- Self-assessment activities
- Appropriate and timely document review
- Assignment of adequate, competent, and appropriately trained personnel

BBL	TOPIC:		PROJECT PLANNING AND REVIEW	QP 2.01
	Revision B (12/19/02)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

Form QF2.01.01 is a 'living' tool and shall be used to document planning activities for all BBL projects that are expected to exceed \$25,000 in revenues. It is recommended that this project planning template also be used for lesser value projects. The form contains various key elements of sound project planning and is designed to help Project Managers execute an effective project, ultimately meeting client and BBL expectations. Form QF 2.01.01 key elements include:

Section	Description
Cover	Includes general information and revision control. The Principal in Charge, or designee, approves each revision.
A	Allows the Project Manager to identify BBL-related activities that are anticipated throughout the life of the project.
B	Is used to state an overview of the project, including the overall purpose, a work scope summary, and key deliverables.
C	Is used in conjunction with the Client Quality Plan (QP 2.05) and states project-specific client expectations (including confidentiality requirements), goals and objectives based on these expectations, and the supporting metrics used.
D	Addresses issues associated with Risk Management. The requirements include conflict checks, use of the Legal Review Request Form, a check of BBL/State Licenses, client financial review (compensation and D&B credit check), identification of contract number/MSA number/PO number and Agreement Date, Agreement/Authorization for Services, Patent Checks, and a Self-assessment Plan (QP 4.05)
E	Assists the Project Manager in the up-front identification of potential personnel resources. Those selected to perform work activities for the project should be notified as soon as possible.
F	Establishes the Internal and External Communication plans to be used. Includes specific client requirements and instructions, Client/Project Meetings schedule, email and eBBL communications/announcements, anticipated Work Product Distributions to the project team, and Communication Milestones (i.e., % Project Completion, % Budget Expenditure).
G	Describes the scope of specific tasks associated with the overall project, and identifies Task Manager(s), budget, specific work products/deliverables, schedule, and the identification of appropriate independent peer, technical, and/or editorial reviewers. Those selected to perform reviews should be notified of their planned participation as soon as possible.
H	Addresses the effective use of subcontractors and consultants. Information in this section includes the subcontractor's name and address, the location where the subcontractor's work will be performed, a description of the subcontractor's services, identification of the appropriate subcontractor tier designation (I, II, III, IV), budget, verification that the subcontractor is licensed in the state where the services are being performed, location of a copy of this license, verification that BBL has received a certificate of insurance from this subcontractor, and the location of a copy of this certificate.
I	The Project Manager is responsible for identifying Quality Assurance procedures that are applicable to the project and for verifying that personnel are appropriately trained prior to commencing related work activities for this project.
J	Identifies supplemental information for use by the project team. This includes the location of the Client Account Plan, Client Quality Plan (QP 2.05), the Proposal/Budget Letter, Project Authorization Form, Project Organization Chart, Project Bar Chart Schedule, Project Kick-off Meeting Minutes (if available prior to distribution of the Project Plan), and any other background information needed by the project team to successfully perform project activities. Project Managers may elect to attach the supplemental information to communications with team members.

B. CONTROL OF CHANGES

Changes in project scope and requirements often occur. Identification, documentation, evaluation, and reporting of changes are essential. Changes that affect technical, budgeting, and/or scheduling activities may result from, but are not limited to:

- Incomplete early project data and interpretations;
- Changes in site conditions;
- New scientific and engineering knowledge and developments;
- Newly defined or perceived project needs;
- Regulatory revisions;
- Innovation; and
- Schedule deviations.

Change simply means that original plans are altered in response to information or events that occur during the course of

BBL	TOPIC:		
	PROJECT PLANNING AND REVIEW		QP 2.01
Revision B (12/19/02)	SECTION:	COMPANY LOCATIONS AFFECTED:	
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work. Changes may have no effect on the final product, or they may require redirection of the work so that a different end product is reached. When necessary, the Project Manager will notify the client and receive approval prior to implementing any change. Following the identification of changes, the Project Manager will notify appropriate personnel of the change, document why the change is needed, verify that appropriate approvals have been performed, communicate new instructions or directions to the project staff, and ascertain that affected documents are reviewed, as necessary. Changes may consist of one or a combination of the following:

- Change that does not directly affect the project contract (i.e., technical change);
- Change in work scope that will result in contract modification (i.e., contractual change); or
- Change in the project plan (e.g., personnel change).

Change Order (Technical)

Technical change is a variance from original work instructions that occurs during the normal course of work. When necessary, the Project Manager will notify the client and receive approval prior to implementing any change. Project personnel performing field or office activities are responsible for identifying and documenting such changes and notifying the Project Manager for evaluation. Approval must be obtained from the Project Manager prior to initiating any planned change in BBL's scope of services or deliverable(s).

Documentation of changes is necessary so that changes in the scope of services/work products can be evaluated. The original work instructions, together with documented changes, provide an "as-performed" description of the work. The Project Manager distributes the change in written format to the appropriate team members. The document describing the change is signed and dated by the appropriate project team member. For field operations, initial documentation may be recorded in the field notebook or on the Field Activity Log.

Change Order (Contractual)

A proposed change may be initiated by BBL or by authorized client technical and contract personnel. Contractual changes may require modifications to the contract and/or an individual task order agreement, or may require the creation of a new agreement. BBL's *Project Manager's Handbook* provides guidance for contractual changes and is available on the corporate Intranet.

When both the client and BBL have reviewed the information, and change negotiations have been completed, the client will formally approve or reject the change request. BBL will not commence work on any change until approval is received in writing, unless approval is granted by the Project Officer, or an appropriate officer of BBL. Written authorization by the client is still required and should be provided as soon as possible.

Project Plan Change

Project Planning changes require modifications to the original project planning template. Proposed changes may be identified by any BBL personnel and is authorized by the Project Manager. Planning documents are revised and communicated to all appropriate personnel. Project changes may include, but are not limited to:

- Changes in assigned project personnel;
- Modification of the scope of assessment activities;
- Introduction of a new or alternate subcontractor; and/or
- Changes in project communications.

BBL	TOPIC:		
	PROJECT PLANNING AND REVIEW		QP 2.01
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C. REVIEW AND IMPROVEMENT DURING PROJECT EXECUTION

Document Review

Documents are reviewed to determine technical acceptability and are approved by an appropriate project team member prior to release, publication, or distribution in accordance with QP 3.01 – Client Document Preparation and Review. QP 3.01.01 provides detailed guidance for the systematic review of a technical document, including design/report drawings. The Project Manager must approve these documents (and have the consent of the PIC) prior to release, publication, or distribution and confirm that the project team has followed QP 3.01.

Peer Review

The decision to perform peer review and the extent of review is based on:

- The technical complexity of the work;
- The experience level of project personnel;
- The complexity of project requirements and procedures;
- The effect of changes or nonconformances on the project schedule and project goals; and
- The potential for liability.

Peer reviewers are independent of the project and involve a person of equal (or greater) technical knowledge in the area of the activities being reviewed. Peer reviewers address the following, as appropriate:

- Do the documents (e.g., evaluations, opinions, conclusions, cost estimates) meet client objectives?
- Have the work plans and procedures been correctly implemented?
- Have analytical procedures been adequately implemented to provide data of sufficient detection limits, accuracy, and precision? Have regulatory requirements been addressed?
- Why have project changes or nonconformances occurred? What are the effects?
- Are the data of adequate quality and quantity to justify and verify conclusions?
- Are assumptions, interpretations, judgments, or decisions defensible? Are they supported by the data?
- Is documentation sufficient to verify the validity of the work product?

The reviewer(s) prepare a report to the Project Manager, the Principal in Charge, and others, as appropriate. A peer review report includes the following:

- Date(s) of review;
- Participants (reviewers, project personnel, quality assurance personnel);
- Scope of the review;
- Evaluation of interpretations, decisions, and judgments; and
- Recommendations for changes or additional work.

Project Review

QP 4.05 – Quality Assurance Evaluation provides guidance on the self-assessment process for project review and is available on the corporate Intranet. The progress of work is evaluated to determine whether procedures are being followed, whether project changes or nonconformances have occurred, and what effect of the changes will have on the project. The frequency of these reviews shall be determined by the Principal in Charge.

- END OF PROCEDURE -

Executive Authorization: _____

Date: _____

BBL	TOPIC:		
	PROCUREMENT		QP 2.02
Revision C (07/28/03)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: ALL

STATEMENT OF POLICY:

It is BBL's policy to procure goods and services in accordance with fair, ethical, and legal trade practices. Goods and services are procured when and where needed, in and of the desired quantity and quality, at the lowest possible price, using the most economical shipping methods, and in accordance with sound inventory practices. Only personnel authorized by BBL may make procurements on behalf of the Firm.

PURPOSE AND SUMMARY OF PROCEDURE:

This procedure defines the common process by which BBL procures goods and services, including leases and rentals.

RESPONSIBILITIES:

Officers have the authority to execute contracts or otherwise enter into agreements that commit the Firm's assets or resources. Officers may delegate their purchasing authority to other individuals in accordance with established protocols for such delegation. Any delegation made by an Officer must be formalized in writing and kept on file in the Legal Division. In the event an Officer delegates or assigns purchasing authority to another individual, that individual must be capable and knowledgeable of the requirements governing BBL's procurement policies and procedures, and be skilled and qualified to properly evaluate the transaction to be undertaken.

Delegated Individuals who have authority to purchase goods or services on behalf of the Firm shall adhere to this procedure.

Project Managers are responsible for the overall administration of this procedure in the procurement of project-related goods and services as follows:

- 1) reviewing Procurement Contracts to verify the inclusion of necessary quality provisions, including the collection of subcontractor insurance certificates prior to BBL's execution of the Procurement Contract;
- 2) evaluating potential subcontractor and supplier proposals; and
- 3) initiating change orders or purchase order amendments for work performed by suppliers and subcontractors.

Project Managers granted authority to purchase goods and/or services for project-related use are not authorized to procure non-project-related goods or services, including standard or non-standard equipment purchases (refer to PPM 3.02.01 for additional clarification). Purchases of non-project-related goods and services must be directed to the appropriate Procurement Personnel within the Management Services divisions (see Procurement Personnel, below).

Project Personnel are responsible for using qualified suppliers and subcontractors, documenting subcontractor performance, and notifying the appropriate Procurement Personnel of the evaluation.

Procurement Personnel are responsible for requesting quotations from qualified vendors; providing specific information concerning the scope of work or the item(s) requested; maintaining records of correspondence, meetings, and telephone conversations; and ordering those goods or services within their area or limit of procurement authority. Only corporate Purchasing Personnel have the authority to enter the Firm into a rental, lease, or purchase agreement for non-project-related goods and services, including technical and scientific equipment, real estate, office leases, facility maintenance services and supplies, capital improvements, all company-owned equipment, office equipment (including vehicles, office furniture, and telephone equipment/service, and computer hardware and software.

The **Legal Division** is responsible for reviewing all non-standard procurement agreements or modified BBL Purchase Orders or Procurement Contracts and for obtaining insurance coverage for both project- and non-project-related procurements, as appropriate.

PROCEDURE PROCESS:

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Procurement transactions can be generally divided into the following three categories:

- Goods – tangible or “real” real property
- Services Only – usually professional in nature
- Installed Goods (sometimes referred to as “Works”) – usually non-professional in nature, involving the installation or incorporation of good or materials and/or the use of manually operated equipment.

“Procurement” as an executable action comprises ten basic steps contingent upon the type of goods or services being acquired. The steps in the procurement process are identified below by procurement category:

Table 1. – PROCUREMENT PROCESS BY PROCUREMENT CATEGORY

STEP	GOODS	SERVICES ONLY	INSTALLED GOODS
1	Identify / Assess Your Need		
2	Prepare Bill of Materials	Prepare Bid Specifications	Prepare Bid Specifications and Bill of Materials
3	Identify Potential Suppliers		
4	Solicit Supplier Cost Proposals		
5	Evaluate Supplier Cost Proposals		
6	Award the Procurement Contract		
7	Receive / Evaluate Supplier “Deliverables”		
8	Accept or Decline Supplier “Deliverables”		
9	Inventory /Insure “Accepted” Deliverables		Inventory /Insure “Accepted” Deliverables
10	Dispose of Surplus, Damaged or Obsolete Real Property		Dispose of Surplus, Damaged or Obsolete Real Property

Bid Specifications and/or Bill of Materials establish the “technical” or transaction-specific performance obligations. Technical performance obligations, by way of example, define who the seller is; what is being procured; when it will be needed; how it is to be fabricated, designed, or constructed; where it is to be delivered; and, occasionally, why the goods or services are needed. The general and special terms and conditions of the Procurement Contract define the “commercial” performance obligations. These commercial performance obligations, by way of example, define when payment will be made; under what conditions information disclosures can be made; how contractual disputes will be resolved; or, who will retain risk of loss for delivered goods or services until final acceptance.

1.0 Identification/Assessment of Need(s)

The purpose of assessing the need(s) is to define what is needed and why. Examples include:

- How can the need be filled?
- Are the identified goods or services available through an in-house or other company resource?
- Is it desirable to transfer the liability for such performance to a supplier or subcontractor?
- How can we obtain the best price, the highest quality, and ultimately, the most responsive acquisition and delivery?

2.0 Preparation of Bid Specification or Bill of Materials.

A detailed list of the goods, services, materials, or equipment required must be prepared. Make and model numbers, quantities, and any other product should be identified. All the information reasonably necessary to obtain the desired goods and services must be included. Supply Request Forms to purchase catalog items or standard office or corporate supplies are available on the corporate intranet or by contacting the Purchasing Division. Form completion and distribution instructions are detailed in PPM 3.02.02.

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Bid Specifications and Bills of Materials should clearly describe the specific goods, services, materials, or equipment required and levels of acceptable performance. Bid Specifications must include enough essential information to allow a potential subcontractor to prepare a responsive proposal. Bid Specifications should contain, at a minimum, the following information:

- a definition of the need;
- the expertise, knowledge, materials, products, etc. required;
- the proposed solution (if known);
- an estimated work schedule;
- an estimate of cost; and
- a bid response due date.

3.0 Identification of Potential Suppliers.

BBL's Vendor Database and in-house procurement experts are available for vendor referrals or for help in locating potential suppliers and subcontractors. It is important to consider Prime Agreement requirements for Minority- or Women-Owned Business Enterprise or Disabled Veteran Enterprise participation when identifying potential providers. A Vendor Qualification checklist must be obtained or completed for each potential supplier to confirm vendor compliance with BBL's established vendor qualification criteria. Certain vendors have already successfully met BBL's vendor criteria and do not require completed qualification forms and are referred to as Preferred Providers. It may be necessary to obtain a supplemental insurance certificate from a Preferred Provider to comply with the provisions of the Procurement Contract the special conditions described in the Prime Agreement governing the procurement transaction.

4.0 Solicitation of Supplier Cost Proposals.

Solicitation of vendor quotations will be conducted using the forms and documentation appropriate for the goods or services being procured. Procurement documentation must clearly define quality requirements for each vendor deliverable, including all required vendor submittals (e.g., periodic work progress status reports, product warranties, mandated use of specific sampling or testing procedures, reporting formats, required media), to permit validation of conforming deliverables.

Potential suppliers should be provided a copy of the Bill of Materials and/or Bid Specification. The RFP should include the following (a sample RFP is available for reference or by accessing the corporate intranet):

- a copy of the Bid Specification, including a Bill of Materials, when necessary;
- a sample copy of BBL's commercial terms and conditions;
- any Prime Agreement flowdown provisions;
- any other special terms and conditions applicable to the vendor's execution or installation of the desired services; and
- a request for copies of all applicable product and vendor warranties.

Where applicable, the RFP must clearly specify that the supplier is responsible for transportation and risk of loss until BBL accepts delivery at the location designated by BBL. Please note that "F.O.B. shipping point" or "F.O.B. Supplier's Dock" means that BBL is responsible for paying shipping costs and assumes liability for any damage occurring during transportation from the supplier's warehouse to the designated delivery location.

If the purchase is tax-exempt, a copy of the tax-exempt certificate must be attached to the Procurement Contract. If the purchase is not tax-exempt, the supplier must identify the applicable amount of sales or use tax to be charged by the supplier. If the supplier fails to list sales or use tax as a separate line item, the Procurement Contract must state

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that the purchase price includes all required taxes in the purchase price.

5.0 Evaluation of Supplier Cost Proposals.

Individual selection of suppliers is based upon overall judgment of price, quality, past performance and related project experience, willingness and capacity to meet schedule and budget requirements, warranties and after-sale service, and/or compatibility with existing procured or installed equipment. Consideration shall also be extended to the plant facilities, technical capability, and financial status of the prospective vendor, as well as the vendor's willingness to accept BBL's commercial terms without modification.

5.1 Additional Evaluation of Contractor-Supplied Quality Documentation

Additional evaluation is required by the Corporate Quality Manager (CQM) or the Corporate Quality Officer (CQO) for any US Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) site where submittal of a Quality Management Plan, Quality Assurance Manual, or equivalent is required by the Consent Order, Unilateral Administrative Order, or any contractual flowdown provisions. The CQM/CQO will evaluate the documentation based upon the USEPA's Quality Management Plan Checklist.

6.0 Issue/Award of the Procurement Contract.

Three Procurement Contracts have been developed by the Firm to facilitate procurement including purchase orders, professional services subcontract agreements and subcontract agreements. Authorized personnel are permitted to sign any of these three "pre-approved" Procurement Contracts to procure goods or services from Independent Contractors without additional Legal Division review unless the agreement is modified by the supplier. Modified contract terms and conditions require Legal Division review and approval prior to execution by authorized personnel. Payment term modifications require approval by the Vice President responsible for relevant project cash-flow issues. Any accepted changes to the preprinted contract terms and conditions must be initialized and dated by the accepting party.

Use of these alternative Procurement Contract documents is subject to review and approval by the Legal Division. Contact the Legal Division when it appears that the use of vendor purchase orders or other types of agreements to procure goods or services is being considered.

The Legal Division should be contacted when procuring services from former employees or other individuals who do not meet the IRS' Independent Contractor criteria. Alternative Procurement Contracts are available to address the liability associated with this type of procurement on a restricted use basis.

Procurement Contracts are to be executed and distributed as follows:

Table 2. - PROCUREMENT CONTRACT DISTRIBUTION

PART NO.	DISTRIBUTION REQUIREMENTS	DISTRIBUTION COPY
Part 1	To Finance	White Copy with Original Signatures
Part 2	To Supplier/Subcontractor	Yellow Copy
Part 3	File Copy	Pink Copy
Part 4	Project Related – to Legal	Goldenrod Copy – include all attachments (e.g., Scope of Work and Insurance Certificate)
	Non-Project Related – to Purchasing	
Part 5 (of Purchase Orders Only)	Project Related – to Finance	Blue Copy – indicate back orders, demurrage, etc., and include all attachments (e.g., packing slips, installation or handling instruction, warranty)
	Non-Project Related – to Purchasing	

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All contracts between BBL and another legal entity or individual are to be prepared and executed in written form, except for legitimate Emergency Procurements executed in accordance with this procedure. The Firm will not accept as legally binding any oral agreement that is not finalized and executed in written form.

6.1 Contract Amendments.

During the active life span of any given Procurement Contract, it may be necessary to:

- change or modify a bill of materials or a scope of services;
- change a delivery date or modify a period of performance;
- increase or decrease the dollar amount of the original Procurement Contract;
- exercise a renewal option;
- modify a commercial term to reflect modifications to the agreement's technical terms; or
- terminate the agreement early for convenience or for cause.

Any required modifications to a Procurement Contract must, like the contract it is amending, be issued in written form. Subcontract Change Order and other amendatory forms are available for use through the corporate intranet or by contacting the Legal Division. Subcontractor Change Order forms and Purchase Order Amendments are to be issued in four or five parts, respectively, and distributed in the same manner as the agreements these forms are amending.

6.2 Emergency Procurement Procedures.

Consistent with the emergency, submit a request to the appropriate Procurement Personnel by the most expedient means. To initiate an emergency procurement, contact the appropriate Purchasing Personnel to obtain a Purchase Order or Procurement Contract number. This number will be assigned to the transaction, with the hard copy of the form held in reserve for completion and submittal by the individual requesting the emergency procurement within three (3) days after receipt of the oral authorization. The Procurement Contract shall be clearly marked "CONFIRMING EMERGENCY PROCUREMENT ORDER," and shall reference the assigned order number. All sales slips and packing lists must be attached to the Confirming Procurement Contract.

7.0 Receipt and Evaluation of Supplier Deliverables.

Upon receipt of the procured goods and services, all items must be inspected for damage and/or compliance with the terms of the Purchase Order. For all goods, a written Receiving Report documenting any damage, shortages, or other discrepancies must be prepared that includes all related shipping papers as appropriate.

8.0 Acceptance or Declination of Supplier Deliverables.

All delivered goods or services must conform to samples or specifications. Non-conforming goods or services must be promptly replaced with conforming goods or services. Failure by the supplier to comply with the terms of the Procurement Contract is cause for a contract default.

The vendor/supplier and/or delivery personnel are to be promptly notified in writing of any damage, shortages or deficiencies in performance of the goods and services. Appropriate written documentation of such notification and communications must be maintained. Any variations or discrepancies must be reported to the supplier as soon as possible or within 48 hours following receipt of the deliverable or as otherwise required under the terms of the Procurement Contract. Non-compliant or damaged goods must be returned to the supplier at the supplier's expense. Corrective actions to be taken by the vendor/supplier, and completion of same, should also be documented.

Leased or rented equipment deliveries must be inspected before the delivery driver departs the site under penalty of claim forfeiture. The employee receiving the delivery must describe any damages or shortages on both BBL's and the vendor's copy of the delivery slip or freight bill. If the equipment received is damaged or in poor operating condition, delivery is to be refused unless stated otherwise in the Procurement Contract or any vendor equipment

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warranties attached to the Procurement Contract.

Claims for damage occurring “in transit” must be reported to the delivery carrier within ten (10) days of the delivery date. The carrier must inspect the packing materials, as well as the damaged article, to avoid claim denial. Hold merchandise and all packing materials for the carrier’s inspection. Provide the Legal Division with a damage report describing the type of damage and location of material to be inspected by the delivery carrier.

8.1 Subcontracted Laboratory Services.

If subcontractor services are used for specialty laboratory analyses, the use of proficiency samples is a viable means for the subcontractor to demonstrate capability. As an alternate, the participation of a subcontract laboratory in recognized proficiency programs shall be made available upon request.

8.2 Credit Memos.

A credit memo is required by BBL whenever goods are returned to a vendor. The Procurement Division initiating the return is responsible for collecting and forwarding a vendor credit memo to Finance to offset any previously received vendor invoice for such returned goods.

9.0 Inventory/Insurance of Accepted Supplier Deliverables.

All non-consumable goods owned by the Firm are assigned individual Asset Numbers by the Purchasing Division or its designate (as defined in PPM 3.02.01) and tagged accordingly. Site-specific inventories of BBL-owned versus client-owned equipment are required for risk management purposes. Project Managers are directed to the Legal Division for assistance with insurance and site inventory protocols. Project Site Inventory Record forms are available on the company intranet.

10.0 Disposal of Surplus, Damaged, or Obsolete Property.

Disposal of surplus, damaged, or obsolete goods, materials, equipment, and/or other real property, when so authorized or designated for disposal, shall be conducted to obtain the greatest possible revenue. Disposal of company-owned real property shall be conducted by the appropriate Purchasing Division (see Procurement Personnel Responsibilities), reported on a “Transferred, Stolen, Lost or Destroyed Items” form, and forwarded to the Purchasing Division for implementation of the appropriate inventory and/or loss control action. Disposal of client-owned real property shall be conducted by the client-designated Project Manager, subject to BBL’s receipt of written authorization by the client to effect such disposal.

TERMS AND DEFINITIONS:

Acceptance Criteria - Specifications of items, processes, or services defined in program- or project-related documents.

Commercial Terms – Contractual performance obligations that are generally referred to as “general” or “legal” terms and conditions. “Commercial” terms are category-specific and define those terms or conditions unique or common to the procurement of a particular type of good or service, while “technical” terms are transaction-specific and identify such things as who is buying and selling the goods or services, what is being purchased, when and where the goods or services are to be delivered, why the goods or services are needed, and how many units are required or how the services are to be delivered.

Consumables – For the purpose of this QP, tangible goods or materials used up or “consumed” during the item’s useful life cycle.

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Credit Memo – Documentation issued by the seller acknowledging the buyer’s right to a payment refund or canceling a debt owed by the buyer to the seller.

Deliverables (procured) - Any tangible or non-tangible goods or services procured by the Firm.

Emergency Procurement – Oral or written procurements that bypass the Firm’s existing procurement protocols in order to prevent loss of life or damage to property, or to mitigate a threat to public health, welfare, or safety.

Flowdown Provisions – The terms and conditions of a principal or “prime” agreement that BBL is obligated, contractually or otherwise, to include in any subordinate Procurement Contracts issued to fulfill the commitments of such principal agreement.

Goods – Tangible, real property.

Independent Contractor – A person or business performing services for another party under an express or implied agreement and is not subject to the other's control of, or right to control, the manner and means of performing the services.

Installed Goods (Works) – See the definition for Non-professional Services.

Negotiated Terms – As used in this QP, the procurement of goods or services using vendor-provided or non-standard BBL Procurement Contracts.

Non-professional Services – A service that requires manual operation or implementation of services. Non-professional Services involve installation or incorporation of goods or materials and/or involve the use of manually operated equipment. Examples include heavy equipment operation, well installation, process equipment installation, the construction trades, and lawn-mowing and landscaping services, and usually result in the production of a tangible other than an opinion-based report.

Prime Agreement – As used in this QP, the principal or “prime” contract between two parties defining the terms and conditions of the initial or “primary” transaction. The prime agreement dictates the terms and conditions of any “subordinate” or sub-tier contracts issued to procure goods or services to fulfill the obligations of the principal contract.

Procurement Document - A purchase order, bid request, contract, change order, drawing, specification, or work agreement.

Professional Service - A service that requires specialized knowledge and training (often through long and intensive academic preparation) or in-depth experience in a particular field or discipline. Professional Services are professional, technical, or consulting services predominantly intellectual in nature. They may include analysis, evaluation, predicting, planning, or recommendation and usually result in the production of an opinion-based report or drawing.

Prequalified Provider – Designation assigned to certain BBL suppliers. Terminology denoting the Firm’s desire to procure goods and services from suppliers in compliance with BBL’s established quality criteria.

Qualification - The verification of a prospective vendor, including an evaluation of safety performance, insurance coverage, and quality procedures.

Service –An activity involving the provision of “labor,” requiring either “physical” (manual or non-professional labor) or “mental” (professional services) exertion.

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Small Purchase (1230 or Petty Cash Purchases) – A “one-time only” purchase of a particular item with a procurement value of less than \$1,000 or from a certain vendor, usually resulting from an unanticipated, time-sensitive need or as otherwise permitted in accordance with BBL’s established procedures and policies.

Subcontractor – A supplier providing services or installed goods.

Supplier – An outside person or entity providing goods or services in exchange for a fee or other valuable consideration.

Technical Terms – Contractual performance obligations that identify transaction-specific requirements. Technical terms typically define who is buying and selling the goods or services, what is being purchased, when and where the goods or services are to be delivered, why the goods or services are needed, and how many units are required or how the services are to be delivered, as compared to “commercial,” “general,” or “legal” terms that are category- specific and set forth terms or conditions unique or common to the procurement of a particular type of good or service.

Vendor - An outside supplier of goods, materials, equipment, and/or minor services.

- **END OF PROCEDURE** -

Chief Executive

Authorization: _____

Date: _____

BBL	TOPIC:		
	CALIBRATION AND CONTROL OF MEASURING AND TEST EQUIPMENT		QP 2.04
Revision A (01/01/01)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

The Firm uses measuring and test equipment in the course of its activities. Equipment used by BBL and affiliated companies and their subcontractors must be in the condition required for the performance of specified activities. A procedure for performing and documenting calibration and for the preventive maintenance of measuring and test equipment will be followed to provide necessary controls.

1. Purpose

The objective is to provide a standard procedure for the calibration and control of measuring and test equipment, including establishing the correct equipment type, range, accuracy, and precision to meet data collection needs. Equipment must be uniquely identified, calibrated against recognized standards, and maintained to provide reliable performance and to meet the Firm's quality requirements.

2. Responsibility

A. Procedure Responsibility

The Project Manager is responsible for implementation of this procedure. The Field Supervisor is responsible for field equipment and equipment used by subcontractors.

B. Individual Responsibility

All project staff are responsible for verifying calibration status prior to using the equipment, and for operating equipment by approved procedures, documenting information, and reporting equipment malfunctions.

3. Definitions

Accuracy: A qualitative evaluation of the agreement between an individual value (or the central tendency of a set of values) and the correct value or the accepted reference value.

Calibration: The process of evaluating and standardizing an instrument by determining the deviation from a known standard.

Measuring and Test Equipment: Devices or systems used to calibrate, measure, gauge, test, or inspect in order to acquire data.

Precision: A qualitative evaluation of measurement data used to describe the dispersion of a set of numbers with respect to its central tendency.

DESCRIPTION OF PROCEDURE:

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All measuring and test equipment will be controlled by a calibration and preventive maintenance program. Instruments that measure a quantity or whose performance must meet stated criteria will be subject to calibration. Calibration of equipment may be performed internally using reference equipment and standards, or externally by agencies or manufacturers. Two types of calibration are presented in this procedure:

- Operational calibration, which is routinely performed as part of instrument usage; and
- Periodic calibration, which is performed at prescribed intervals for equipment such as water-level indicators, pressure recording devices, and thermometers. In general, equipment which can be calibrated periodically is relatively stable in performance.

Preventive maintenance is an organized program of equipment cleaning, lubricating, reconditioning, adjusting, and/or testing intended to maintain proper performance, prevent equipment from failing during use, and maintain reliability.

1. Calibration Procedures

Documented procedures must be used for calibrating measuring and test equipment and reference equipment. Procedures such as those published by the American Society for Testing and Materials (ASTM), U.S. Environmental Protection Agency (EPA), or procedures provided by manufacturers will be used whenever possible.

Where pre-established procedures are not available, procedures will be developed. Factors such as the type of equipment, stability characteristics of the equipment, required accuracy and precision, and the effect of error on the quantities measured must all be taken into account. Calibration procedures must include:

- Type of equipment to be calibrated;
- Reference equipment and standards to be used;
- Calibration method and specific procedure;
- Acceptance tolerances;
- Frequency of calibration; and
- Data recording form.

2. Equipment Identification

Measuring and test equipment owned by BBL and affiliated companies must be uniquely identified using the manufacturer's serial number, a calibration system identification number, or an inventory control tag number. This identification must be attached to the equipment. In addition to the identification number, equipment requiring periodic calibration must bear a label indicating when the next calibration is due. Equipment that is rented or leased for the purposes of measuring and testing must be also be uniquely identified.

All personnel are responsible for verifying calibration status from due date labels or instrument records prior to using the equipment. Measuring and test equipment that is not properly calibrated must not be used.

3. Calibration Frequency

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Measuring and test equipment and reference equipment will be calibrated at prescribed intervals and/or as part of operational use. The calibration frequency will depend on the type of equipment, inherent stability, manufacturer's recommendations, intended use, effect of error on the measurement process, and experience. Calibration frequencies may be defined in project-specific plans or in calibration procedures. The Project Manager or Field Supervisor is responsible for specifying the procedures to be followed to meet project data quality objectives.

Scheduled periodic calibration may not be performed for infrequently used equipment; such equipment will be calibrated on an "as needed" basis prior to use, and then at the required frequencies for the duration of its use.

Field equipment will require an operational check (Item 7) prior to use, and then again at the end of the working day. Pre-use calibration should be completed under conditions of anticipated use (e.g., temperature, humidity, atmospheric pressure) if these parameters may influence results.

4. Reference Equipment and Standards

Whenever possible, equipment must be calibrated using reference equipment (i.e., physical standards) and chemical and radioactive standards having known relationships to nationally- recognized standards (e.g., National Institute of Standards and Technology [NIST]) or accepted values of natural physical constants. If national standards or constants do not exist, the basis for the calibration must be documented.

Physical standards may include calibration weights, certified thermometers, standard measurement tapes, gauge blocks, and reference gauges. These are generally used for periodic calibrations. Physical standards must be used only for calibration.

Chemical and radioactive standards may include reagents, solvents, and gases. These may be Standard Reference Materials (SRM) provided by NIST or the EPA, or they may be vendor-certified materials traceable to NIST or EPA SRMs. Chemical and radioactive standards will primarily be used for operational calibrations.

The date of receipt and expiration date must be clearly labeled on the container of each standard. If calibration standards are transferred to additional containers, these containers must be labeled with the name of the standard, the lot number, and the shelf life. Any calibration standard that exceeds its shelf life must not be used and must be discarded.

If equipment is sent to the manufacturer or calibration laboratory for calibration, adequate documentation must be maintained to establish the calibration method, reference standard source, or traceability to recognized standards.

5. Calibration Failure

Equipment failing calibration or becoming inoperable during use will be removed from service and segregated to prevent inadvertent use, or tagged to indicate it is out of service. The equipment must be repaired and properly recalibrated; equipment that cannot be repaired will be replaced.

The results of activities involving equipment that has failed recalibration will be evaluated by the Project Manager. If the results are adversely affected, the findings of the evaluation will be documented and appropriate personnel will be notified.

Periodic calibration of measuring and test equipment does not replace the user's responsibility for verifying

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proper function of equipment. If an equipment malfunction is suspected, the device must be tagged or removed from service, and recalibrated. If it fails recalibration, it must be repaired or replaced.

6. Documentation of Calibration

Records must be maintained for each piece of calibrated measuring and test equipment and each piece of reference equipment. The records must indicate that established calibration procedures have been followed, and that the accuracy of reference chemical and radioactive standards has been verified.

Records for periodically calibrated equipment must include the following minimum information:

- Type and identification number of equipment;
- Calibration frequency and acceptance tolerances;
- Calibration dates;
- The individual and organization performing the calibration;
- Reference equipment and/or standards used for calibration;
- Calibration data;
- Certificates or statements of calibration provided by manufacturers and external organizations; and
- Documentation of calibration acceptance or failure, and of repair of failed equipment.

An individual file folder should be established for each piece of measuring and test equipment to maintain records. Equipment periodic calibration files should contain an equipment calibration and maintenance record, calibration data forms, and/or certification of calibration provided by manufacturers or external organizations, and notice of equipment calibration failure.

Measuring and test equipment used for field investigations will typically be calibrated as part of operational use. For this equipment, records of the calibrations or checks will be documented as part of the test data (e.g., in the field notebook or on a Field Activity Log). Equipment-specific forms may also be developed. These records should include information similar to that required for periodically calibrated equipment. Documentation related to malfunctioning equipment or equipment that fails calibration should also be included in the individual equipment file.

Calibration files for equipment requiring periodic calibration should be sent with equipment that is transferred to allow a continuously updated record to be maintained. Recalibration of sensitive equipment should be performed following the transfer.

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When measuring and test equipment is rented or leased, procurement documents must specify that a current certificate of calibration must accompany the equipment. This certificate must be maintained with the project documentation calibration records.

7. Operational Checks

Certain equipment may require periodic operability tests or checks to verify that operating systems are within the allowed range. These tests are in addition to formal calibration. Like calibrations, these tests will be performed at specified frequencies, or as part of operational use using reference equipment and standards.

If an instrument fails an operability test, and corrective action cannot bring the instrument into tolerance, it must be removed from service and segregated to prevent inadvertent use, or tagged to indicate it is out of service. Such equipment will be repaired and/or recalibrated.

Operability tests will generally be performed in conjunction with data acquisition. Information recorded must include:

- Type and identification number of equipment (e.g., model and serial numbers);
- Test date;
- Individual and organization performing the test;
- Reference equipment and standards used;
- Test data; and
- Documentation of acceptance or failure.

Documentation may be in the field notebook, or on a Field Activity Log.

8. Preventive Maintenance

Preventive maintenance is an organized program of equipment cleaning, lubricating, reconditioning, adjusting, and/or testing intended to maintain proper performance, prevent equipment from failing during use, and maintain reliability. Specific maintenance details may be supplied in project-specific plans. A typical preventive maintenance program includes:

- A listing of the equipment that is included in the program;
- The frequency of maintenance (manufacturer's recommendations or previous experience with the equipment);
- Service contracts;
- Identification of spare parts;
- Items to be checked and specific protocols to be followed; and
- Documentation of maintenance.

Maintenance records of measuring and test equipment must be maintained at the location that is the host for the equipment. Documentation of subcontractor and BBL equipment that is used for an individual project will be included in the project files. Records for multi-project equipment will be maintained by the location that controls the equipment.

Measuring and test equipment must be controlled through the use of sign-out/sign-in records or other suitable

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method. Equipment that is returned from field use must be free of contamination, packaged in a manner suitable for storage, and returned to its designated area. Support personnel should be notified of performance problems with any piece of equipment.

- END OF PROCEDURE -

**Executive
Authorization:** _____

Date: _____

BBL	TOPIC:		
	CLIENT QUALITY PLANNING AND REVIEW		QP 2.05
Revision B (07/23/02)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED:
			All

STATEMENT OF POLICY:

It is BBL's policy to treat each client as the most important client we have. Effective client-centered planning is essential for meeting or exceeding the quality expectations of our clients. The Principal-In-Charge (PIC) will identify and establish quality measurements and monitor the most significant client expectations. The Client Quality Plan provides a tool for developing and implementing a program to meet or exceed client expectations. The plan adapts to changing client conditions and should be considered a "living" document.

1.0 Purpose

This procedure assists the PIC in identifying key quality elements for a successful client-centered quality program. An effective Client Quality Plan is critical for consistently delivering quality services and products to our clients.

2.0 Responsibility

Identified in the flow chart at the end of this procedure.

3.0 Definitions

Client Expectations: Non-technical or non-contractual opportunities that BBL has identified which enhance our reputation and improve our overall service for the client. These expectations may include the client's corporate goals, strategies, strategic plans, or personal performance goals. Examples include: Initial response to all client inquiries within 4 hours; preferred communication channels; adherence to client cultural standards (i.e., no foreign-made vehicles on property).

Client Requirements: Stated or inferred requirements performed by BBL for the delivery of specified products and services. These are typically stated in contractual documents.

Internal Audit: A formal, planned, and documented activity performed to investigate, examine, or evaluate compliance with established criteria. Individuals independent of the activities or program being audited conduct audits. The audit is complete when all nonconformities to the established criteria are resolved and improvements have been implemented.

Nonconformance: A deviation from requirements; a deficiency that adversely affects the quality of an item or activity.

Self-assessment: A planned and documented activity performed upon one's own area of activity to investigate, examine, or evaluate compliance with established criteria.

4.0 Description of Procedure

The Client Quality Plan is segmented into eight categories, each building upon the previous. The plan identifies significant client expectations, measurable quality objectives based upon these expectations, program communication mechanisms needed to support client activities, unique client requirements associated with invoicing; reinforces self-assessment and audit activities; and plans for overall program review and improvement.

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The PIC will address this plan in a manner that enables BBL staff to better understand the needs of the client. PICs will utilize the Form QF-2.05.01 for developing and documenting each Client Quality Plan. Program and Project Managers are guided by this document while developing and maintaining Project Plans (as developed from Quality Procedure 2.01).

Each of the following sections addresses and guides the PIC in the development of a Client Quality Plan. General information to be identified at the beginning of the plan includes:

Client identification: The client that has engaged BBL's services.

BBL-management personnel: Identification of the management team for the client program.

Review/revision plan: Pre-established dates allowing for review of the Client Quality Plan.

4.1 Scope of Quality Plan

This section allows the PIC to concisely identify the scope and intended use of this Client Quality Plan.

4.2 Identification of Client Expectations

This section allows the PIC to identify client-specific expectations that may be beyond requirements identified in the contracted Scope of Work. This section is necessary to answer the following question: If met, what expectations would allow the client to view BBL as the best supplier in the industry?

4.3 Client Quality Metrics

This section allows the PIC to establish vital quality measurements to be used for monitoring and improving client expectations. The metrics are used to measure the effectiveness of meeting or exceeding client expectations identified in section 4.2 of this procedure.

4.4 Project Information

Project Site: Each specific project is defined to effectively distinguish it from other projects for the client. The address or location description should be included.

Project Managers: The PIC will identify the project manager, who will be responsible for the overall direction of the project.

Verification of Project Plans: Project plans are required for project authorization. Any exceptions must be documented and approved by the PIC.

Training Requirements: The PIC will identify appropriate training issues that he/she feels are a necessary component of each project manager's skill base. This may include training programs in the areas as OSHA, Six Sigma, Teamwork, Quality Assurance Procedures, equipment use,

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client-specified, etc.

4.5 Communication Planning

External – Client: This section will identify the key methods of communicating to the client, including the documentation and frequency of the communication activity, and the identification of a primary BBL contact.

Internal – Project & Client Team: Internal communication methods should be identified, including the use of e-BBL, e-mail, routine meetings, and conference calls, as appropriate.

4.6 Client Invoicing Requirements

This section allows the PIC to identify specific client invoice. Examples include:

- Format for transmittal letter and description of work efforts;
- Purchase Order/Project Authorization requirements; and
- Unique invoicing requirements (i.e. can't bill certain BBL job classifications, etc.).

4.7 Audit and Self-Assessment Planning

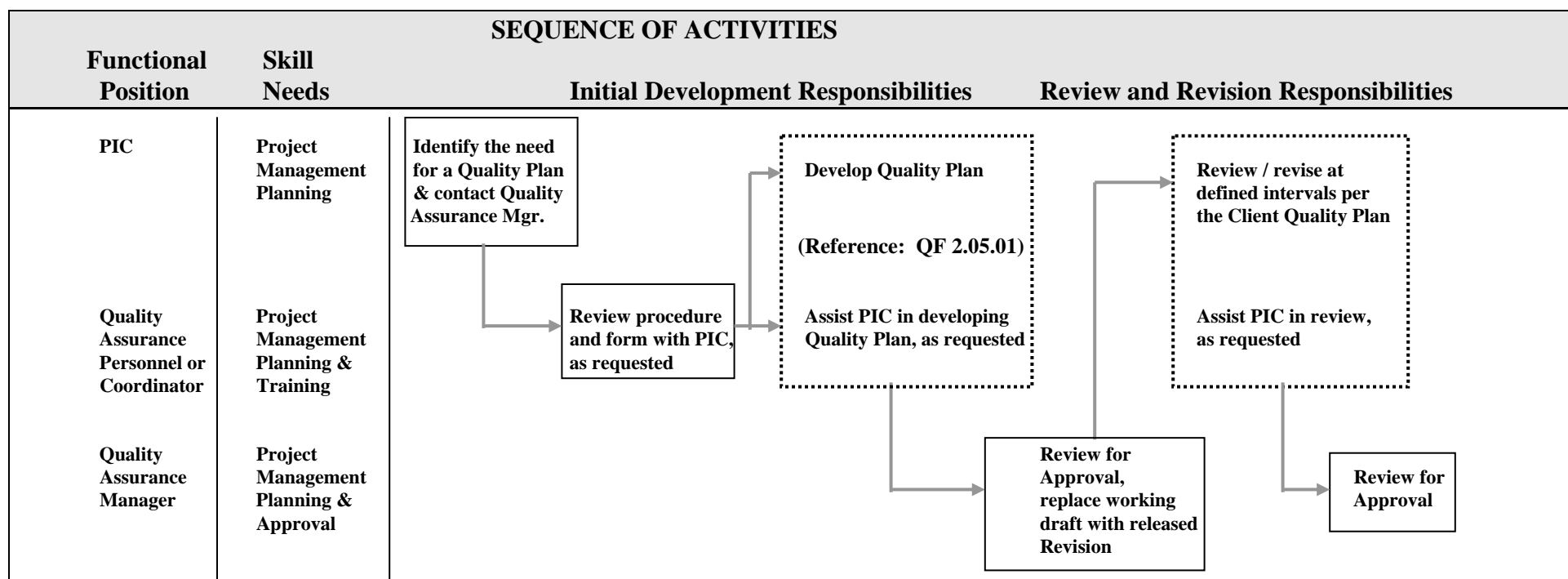
Auditing and self-assessment planning should be outlined in accordance with Quality Assurance Procedures 4.04, Management System Evaluation, and 4.05, Internal Audits. This section allows the PIC to identify specific evaluation requirements for the program.

4.8 Action Items for Next Review

This section allows the PIC to identify and review action items needed to successfully meet the goals set forth in this Client Quality Plan.

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5.0 Process Flowchart



- END OF PROCEDURE -

Executive Authorization: _____ Date: _____

BBL	TOPIC:		PROPOSAL DEVELOPMENT PROCESS	QP 2.06
	Revision B (11/24/04)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy that all requested proposal and qualification documents accurately represent our Firm's ability to provide services that meet or exceed our clients' expectations and protect client confidentiality, as necessary.

Purpose

The objective of this quality procedure (QP) is to provide a common process for the development and delivery of high-quality proposals and to guide response team efforts in making a Go/No-Go decision.

Responsibilities

Principal in Charge (PIC) – The PIC is responsible for providing overall quality assurance of the proposal process, making the Go/No-Go decision, and serving as client liaison.

Officer in Charge – In situations where the PIC has appropriately delegated his or her authority or the proposal activities are not related to a Tier Client, an Officer in Charge is assigned responsibility for providing overall quality assurance of the proposal process, facilitating the Go/No-Go decision, and serving as client liaison.

Proposal Manager – The Proposal Manager has ultimate responsibility for the proposal. The Proposal Manager is responsible for directing and executing this QP – specifically, for selecting the proposed project team and teaming partners/subcontractors/subconsultants; developing the scope of work, financial information, and schedule; and guiding and supervising the response team. When necessary, the Proposal Manager is responsible for delegating his/her authority to an appropriately skilled individual (see Section 4.1).

Response Team – The response team comprises the individuals (see Section 2.1) responsible for immediately addressing questions or uncertainties related to the potential opportunity that must be resolved before a Go/No-Go decision can be made. The response team conducts necessary research, discusses the opportunity with various BBL representatives (e.g., Client Services Committee [CSC], Finance, Legal), gathers information, and provides it to the PIC/Officer in Charge and Proposal Manager.

Project and Support Staff – All staff who participate in proposal planning and development activities are responsible for complying with this QP.

DESCRIPTION OF PROCEDURE:

The proposal development process incorporates five sub-processes (stages) that enable BBL to produce an accurate, realistic, and timely proposal. Each sub-process, described below, establishes a framework for determining the viability of the proposal opportunity, the critical factors influencing the Go/No-Go decision, the staff required to contribute to proposal development, the proposal review process, and the activities required following a win or loss. A flowchart representing the overall proposal process is located at the end of this QP.

1. STAGE 1 – OPPORTUNITY IDENTIFICATION

1.1. Request for Proposal (RFP)

When an RFP (or news of a potential opportunity) from a Tier Client is received by any BBL employee, it is forwarded to the appropriate PIC. An RFP/potential opportunity from a Non-Tier Client must be submitted to and approved by the CSC Chairperson (for industrial services) or the Municipal Business Unit Leader (for municipal services) to fulfill new-client requirements set forth by the CSC.

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1.2. Unsolicited Proposal

When an unsolicited proposal is being considered, the appropriate PIC/Officer in Charge assumes accountability over the proposal process.

1.3. Significant Opportunity Determination and Activity

A significant opportunity is defined as an opportunity meeting one of the following four criteria:

- gross revenue potential in excess of \$1.0 million;
- NOR potential of \$0.5 million;
- strategic "must win" for a Tier Client; or
- strategic "must win" for an attack team or niche service team.

The CSC Chairperson must be made aware of a significant opportunity within 1 business day of RFP receipt. The CSC Chairperson reviews the opportunity and provides the support necessary to keep adequate resources available and applied throughout proposal development.

2. STAGE 2 – GO/NO-GO DECISION

2.1. Response Team Selection

The PIC/Officer in Charge identifies and engages the following:

- Proposal Manager;
- Marketing Communication Specialist (MCS);
- Business Manager;
- Legal Division representative;
- Appropriate technical and support personnel; and
- Appropriate representative of the BBL company best suited to perform the work.

2.2. Response Team Activities

The goal of the response team is to make a sound Go/No-Go decision early in the process (Best Practice Goal: within 72 hours) so that BBL can confidently pursue an opportunity or cease activities before unwarranted time and effort are invested.

2.2.1 Communication Activities

The Proposal Manager sets up and chairs an initial conference call or meeting to review the potential RFP/opportunity with the response team. The MCS helps drive discussion by completing a proposal worksheet and enters the opportunity into the designated tracking database(s).

2.2.2 Conflict Check

All potential and real conflicts must be identified, eliminated, or resolved before moving ahead with the proposal effort. The PIC/Officer in Charge or Proposal Manager (hereafter identified as the Proposal Manager) is responsible for conducting the conflict check and obtaining confirmation from the Legal Division that no conflict exists or that the conflict issue has been resolved. Refer to PPM 10.01.10 (Conflict of Interest) located on the corporate Intranet.

2.2.3 Verification of State Licenses and Certifications

The Proposal Manager is responsible for obtaining confirmation from the Legal Division that the BBL company responding to a proposal or opportunity is licensed to work in the state in question and that proposed personnel possess appropriate state licenses (e.g., P.E., P.G., contractor).

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2.2.4 Legal/Contract Review

The Legal Division reviews the proposal and terms and conditions to identify and address all potential legal considerations. When a contract is already in place for the soliciting client, the Legal Division identifies the contract number and agreement date, determines the status of the contract, provides legal review, and recommends changes necessary to execute the contract. If the opportunity is for a new client, the Legal Division reviews the Draft Services Agreement in the RFP (if provided). The Legal Division notifies the PIC/Officer in Charge of any clauses presenting legal ramifications that must be resolved prior to contract execution.

2.2.5 Consideration for Site Visit

If a site visit is necessary to obtain pertinent information before the Go/No-Go decision can be made, the Proposal Manager coordinates the site visit with the appropriate parties. The response team develops a list of questions to be confirmed during the site visit and requests that photos be taken (assuming permission to do so is granted).

2.2.6 Consideration for Subcontractors, Subconsultants, and/or Vendors

The Proposal Manager determines whether the services of subcontractors, subconsultants, and/or vendors are necessary to meet RFP requirements, or if they would add value.

2.2.7 Credit Review

The Business Manager gathers and evaluates necessary credit information (e.g., Dunn & Bradstreet, Lexus, SEC search – Annual Reports, 10k, 10q, Public Records/Internet Search) on the prospective client and recommends credit decisions to the PIC/Officer in Charge. This review determines whether the prospective client has the ability and willingness to pay BBL within the terms of our contract. If problems exist, the Business Manager discusses the situation with the PIC/Officer in Charge and the Proposal Manager to determine how to best manage the risk.

2.2.8 Go/No-Go Decision

The Go/No-Go decision is predicated upon sound business analyses, including the Firm's ability to provide appropriate resources to achieve RFP objectives and to satisfactorily resolve the issues identified in Sections 2.1.1 through 2.2.9. The Go/No-Go analysis and decision must be completed in an efficient and timely manner, before the Firm invests unnecessary time and effort. The Go/No-Go form is located on the Corporate Development website and its use is highly recommended for all Go/No-Go decisions.

2.2.9 Decision Notification

If a Go decision is made, the proposal planning process (Stage 3) begins. If a No-Go decision is made, the Proposal Manager notifies the client and response team of this decision and the reasoning behind it.

3. STAGE 3 – PROPOSAL PLANNING

3.1. Expansion of the Response Team

The Proposal Manager selects the technical staff members to support the proposal process.

3.2. Identification of Proposed Project Team Personnel

The Proposal Manager selects the proposed project team. As necessary, the Resource Coordinator(s) assist in the identification of key project personnel. It is imperative that any scheduling conflicts be resolved before personnel are committed to a project.

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3.3. Kick-off Meeting and Subsequent Communications

The response team addresses the following topics during the kick-off meeting:

- proposal outline, schedule, and team member assignments (see Section 3.4 below);
- analysis of project scope/tasks;
- analysis of client expectations:
 - project-specific aspects of the Client Quality Plan, and
 - project-specific goals and objectives based on client expectations;
- project schedule (deliverables and deadlines);
- project team staffing (organizational chart);
- qualifications and experience;
- cost estimates;
- form of submittal;
- BBL distinguishers (advantages) and what it will take to win the work based on the advantages of competitors expected to bid on this work; and
- subcontractor/vendor/subconsultant/teaming partner identification, selection, and roles/responsibilities (as necessary).

3.4. Proposal Outline, Schedule, and Response Team Member Assignments

- The response team develops a proposal outline based on the requirements of the RFP within 1 business day of a Go decision;
- The outline is used to develop the proposal schedule, identify the content requirements of the proposal sections, and determine the availability of response team members and other resources; and
- The outline is used to delegate section writing assignments (with due dates).

4. STAGE 4 – PROPOSAL PREPARATION, REVIEW, APPROVAL, AND DELIVERY

Proposal production follows the steps outlined in QP 3.01 – Technical Documents Process (i.e., planning, execution, approval, and delivery), as well as the following requirements:

4.1 Proposal Manager Responsibilities

- selecting the proposal format (i.e., standard comb-bound, enhanced graphic, letter, or electronic [email or CD-ROM] format);
- assigning the writing of proposal sections (e.g., scope of work by task, project schedule, cost);
- meeting the schedule deadlines;
- soliciting and notifying subcontractor(s)/subconsultant(s)/vendor(s)/teaming partner(s);
- writing (or delegating) the cover letter; and
- conducting final proposal review and maintaining ultimate responsibility for proposal content:
 - In addition to the review requirements of QP 3.01, a final proposal that will be transmitted to the client in electronic format must first be transmitted to a member of the response team for review of content and format. This review will be built into the proposal schedule.

If the Proposal Manager becomes unavailable to the proposal team during the proposal preparation process, he/she must delegate authority for all proposal responsibilities and decisions to an individual approved by the PIC/Officer in Charge. If the Proposal Manager is the PIC/Officer in Charge, approval must be granted by a more senior officer of the Firm. The Proposal Manager will inform all proposal team members of the delegation of authority.

4.2 MCS Responsibilities

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- helping to establish the proposal schedule;
- entering information about the opportunity into the designated tracking database(s);
- finalizing the outline of the proposal and distributing it to the response team;
- originating text for the introduction, project team, and qualifications and experience sections;
- consolidating and proofreading proposal material developed by the response team;
- working with the Proposal Manager to verify that RFP requirements have been met;
- producing, distributing, and tracking the proposal; and
- updating the Deltek database with new material (e.g. boilerplate, resumes, project profiles).

4.3 Business Manager Responsibilities

- working with the response team to establish/apply a client-specific pricing structure.

4.4 PIC/Officer in Charge Responsibilities

- periodically reviewing and providing final approval of the proposal.

4.5 Additional Response Team Responsibilities

- Response team members are expected to comply with the schedule and with QP 3.01 – Technical Document Process. If a team member cannot meet a deadline, he/she must notify other team members immediately so that measures may be taken to complete, review, and deliver the proposal on time.
- If the schedule is compromised to the point that the performance of the proposal team, the quality of the proposal, or the proposal delivery date may be affected, the Proposal Manager must notify the PIC/Officer in Charge of the proposal immediately. In turn, the PIC/Officer in Charge must notify the Corporate Development Division Leader immediately.
- Response team members meet often (in person and/or by phone) during the preparation of the proposal to quickly identify and resolve potential issues (e.g., content, layout) to avoid impacting the proposal schedule. These discussions also facilitate improvements to proposal content as it is developed.

5. STAGE 5 – LESSONS LEARNED AND WIN/LOSS TRACKING

5.1 Lessons Learned

The MCS initiates an informal proposal debriefing within 1 week of proposal transmittal. At a minimum, the Proposal Manager and MCS attend; however, the entire response team is encouraged to participate. The debriefing focuses on aspects of the proposal and process that were successful or unsuccessful and on client feedback to date, with the goal of identifying and applying successful strategies to future proposal efforts.

5.2 MCS Follow-up

- If the RFP provides an anticipated award date, the MCS contacts the Proposal Manager 1 week after that date (and weekly until the project is awarded) to determine whether the project has been awarded.
- If the RFP does not provide an anticipated award date, the MCS contacts the Proposal Manager 2 weeks after the proposal due date (and weekly until the project is awarded) to determine whether the proposal has been awarded.

5.3 Notification

Once the project is awarded, the Proposal Manager notifies the response team of the outcome and subsequently debriefs the response team regarding the client's reason(s) for selecting BBL or for awarding the project to another firm. The MCS notes the win/loss and reason(s) why BBL was/was not awarded the project (which can and should be integrated into future proposal response strategies) into the designated tracking database(s).

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DRAFT Revision B (10/28/04)

TOPIC:

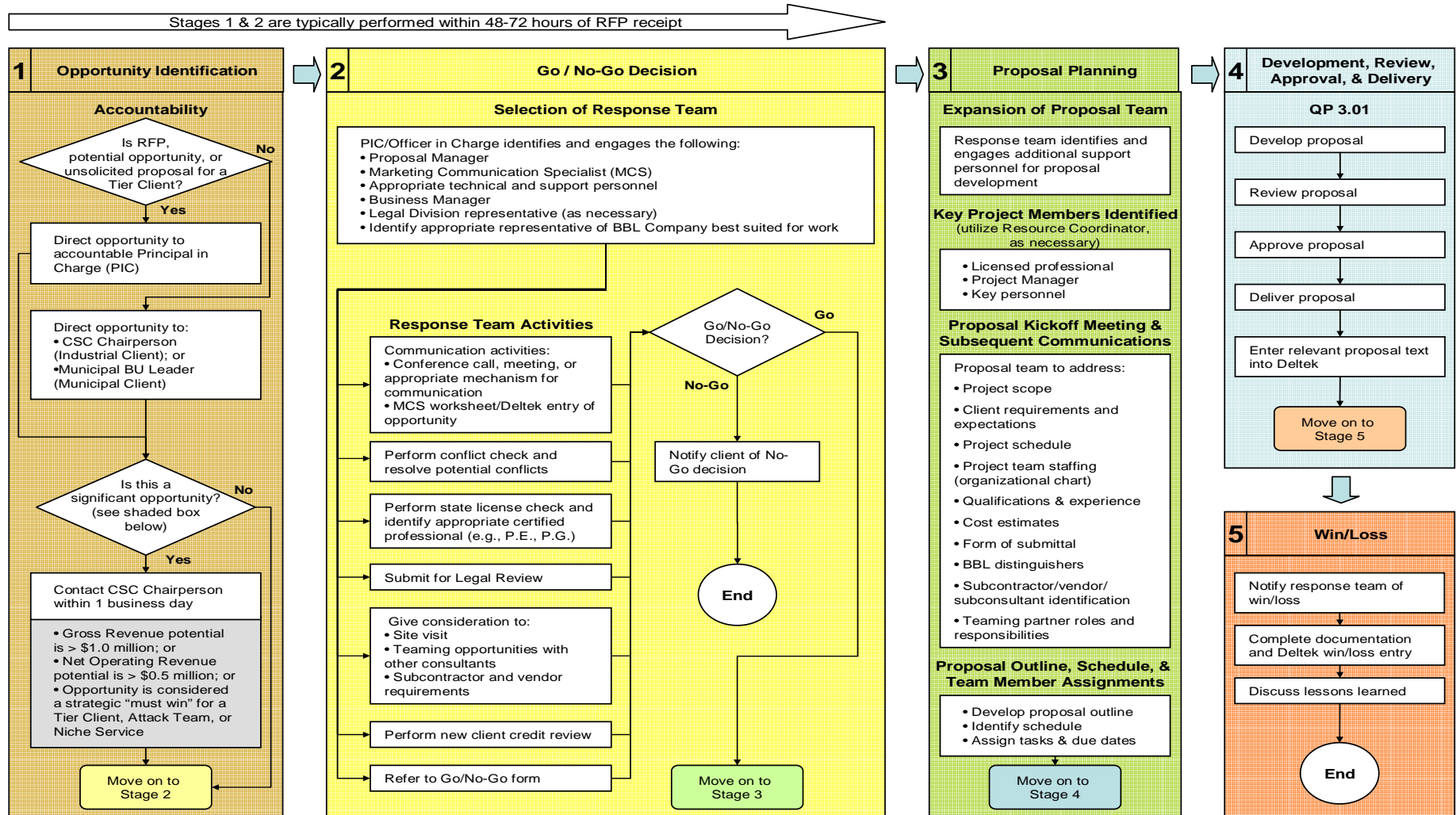
PROPOSAL DEVELOPMENT PROCESS

QP 2.06

SECTION:

Quality Assurance Procedure

COMPANY LOCATIONS AFFECTED:
All



- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	TOPIC:		COMPUTER INFORMATION TECHNOLOGY	QP 2.07
	Revision A (7/28/03)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy that all computer hardware and software used for environmental programs undergo a controlled process for acquisition, testing, installation, maintenance, and evaluation.

Purpose

The objective of this quality procedure (QP) is to provide a common process for identifying, developing, and maintaining computer hardware and software used for business-related purposes.

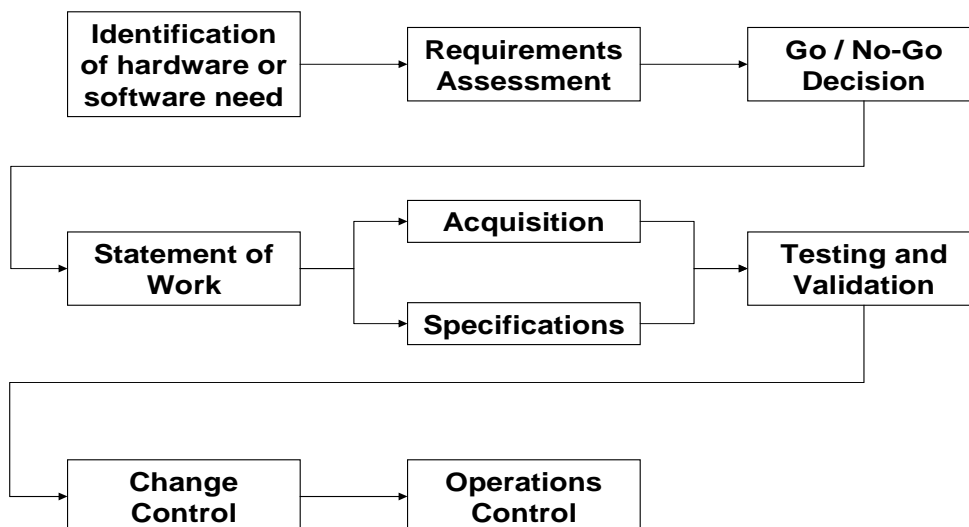
Responsibilities

Corporate Information Technologies (CIT) Division – CIT personnel are responsible for following the guidance presented in this QP.

DESCRIPTION OF PROCEDURE:

The Firm employs the computer hardware components and software programs required to manage its business and to manage and implement client projects. The Firm's CIT Division is responsible for all computer-related activities, including but not limited to servers, desktops, networks, applications, web technology, and telecommunications. It is the responsibility of the CIT Division to test, install, maintain, and control the technology hardware, software, and services used by staff.

The common process of identifying, acquiring/developing, implementing, and testing computer hardware and/or software is provided in the following flowchart:



BBL	TOPIC:		COMPUTER INFORMATION TECHNOLOGY	QP 2.07
	Revision A (7/28/03)		SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

Requirements Assessment: Requirements for technology acquisition and development, including hardware, software, and services, are determined by CIT by interviewing the authorized requesting party. The Requirements Assessment process is utilized for all solutions, whether custom developed in-house, or purchased as commercial off-the-shelf. The Requirements Assessment identifies the need for system functionality; user access controls; user interfaces; system processing, reporting, redundancy and backup, compliance with company, client, statutory, and regulatory requirements; architectural consistency; intersystem requirements; and validation processes.

Go/No-Go Decision: The Go/No-Go Decision is a deliverable of the Requirements Assessment process and provides an estimate of the costs, complexity, and effort to deliver the solution. Depending on the requirements, a decision will be made to approve, delay, cancel, or alter the initiative.

Statement of Work: Depending on the scope of the initiative, a second deliverable of the Requirements Assessment process may be a Statement of Work (SOW). The SOW documents the task to be performed, assumptions, dependencies and impact on other systems and processes, the end user, and the acceptance criteria. The SOW requires the approval of the stakeholder and CIT Management.

Acquisition: The acquisition of technology, including hardware, software, and services, requires a complete review of the functional, architectural, and operational requirements and a review of comparable products. Within the review of products, the process requires an examination of the solution, its presence in the field, the state of the art (as it is understood), licensing considerations, the after-sale support, and the financial health of the provider.

Specifications: The specification documents detail the design of the system, including tables, databases, field validation, formulas, technology interfaces, user interfaces, report definitions, and process controls. The development phase of the initiative is performed according to the specifications. In-stream design changes are applied to the specification document, as necessary. Specifications require the approval of the stakeholder and CIT Management.

Testing and Validation: The deliverable of this process includes a test plan, which describes the overall approach to testing the solution, and a test script, which details the testing activities. The test and validation process verifies that the solution satisfies the requirements from a functional and an operational perspective.

Change Control: This process verifies that the implementation is performed correctly and is properly documented, and that affected stakeholders are notified. The change control process documents the implementation schedule, type and scope of changes, implementation steps, and back-out steps. Implementation requires the approval of the stakeholder and CIT management.

Operations Control: This process verifies that all operational aspects of the solution are understood and documented. The deliverable is one or more specific operational procedures that describe the normal operations, expected and abnormal results, and resolution procedures necessary to correct for abnormal events.

- END OF PROCEDURE -

**Chief Executive
Authorization:** _____

Date: _____

BBL	TOPIC: FINANCIAL CONTROLS: CLIENT AND PROJECT MANAGEMENT QP 2.08		
	Revision A (11/24/04)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy that all employees understand and comply with all required Financial Controls and Sound Business Practices. Such compliance is critical to our goal of meeting or exceeding our internal and external financial requirements and obligations.

Purpose

The purpose of this quality procedure (QP) is to promote compliance with BBL's common financial processes, contributing to the Firm's fiscal health and enable us to make sound business decisions that benefit BBL's employees, clients, and stockholders. For client management purposes, this QP is to be used with QP 2.05 – Client Quality Planning and QP 2.06 – Proposal Development Process. For project management purposes, this QP is to be used with QP 2.01 – Project Planning, QP 2.02 – Procurement, and the BBL Project Manager's Handbook.

Responsibilities

Principal in Charge (PIC) – The PIC is ultimately accountable for implementing and strictly enforcing QP 2.08. The PIC is responsible for all financial matters that exist for a client, which include: client setup and contract matters, financial management (e.g., budgets, revenue, profitability, collections, authorizations, marketing expense), communication to client team, understanding client ethics policies, overall client satisfaction, and guiding Project Managers in project setup, authorizations, and financial management of projects. The PIC may delegate appropriate client and project management responsibilities to an appropriately skilled Officer in Charge.

Project Manager (PM) – The PM is responsible for all financial matters that exist for a project. These responsibilities include: understanding client contract terms, project setup and authorization, financial management of projects (e.g., budgets, revenue, profitability, billing, collections, authorizations, marketing), communication to project team, understanding client ethics policies, and client/project satisfaction.

Client Services Committee Chairperson (CSC Chairperson) – The CSC Chairperson is responsible for approving new clients, reviewing annual client budgets prior to approval, and performing mid-year client budget reviews.

Business Manager – The Business Manager is a senior Finance Division professional aligned with a PIC, Business Unit, and Tiered Client Team to assist with the following: contracting pricing issues, rate and profitability analysis, financial management (e.g., budgets, revenue recognition, collections, credit reviews), and serve as a financial liaison with the external client during labor rate negotiations, e-procurement issues, and other financial matters.

Account Specialist (AS) – The AS provides a first line of communication between Finance and the PM and/or client teams. The AS responsibilities include: accounting system project setup and maintenance, final invoicing and mailing, contract ceiling issues and outstanding receivables follow-up, and invoice collections assistance.

DESCRIPTION OF PROCEDURE

BBL's financial processes have been established at the client, project, and staff levels using a project life-cycle approach. Financial processes are designed so that BBL operates using sound business practices that meet client requirements, internal and external financial reporting requirements, and government compliance requirements. Monitoring and reporting activities are designed to aid BBL staff in complying with these processes and provide a framework for making sound business decisions.

1.0 CLIENT ACCOUNT ACTIVITIES

BBL	TOPIC: FINANCIAL CONTROLS: CLIENT AND PROJECT MANAGEMENT QP 2.08	
	Revision A (11/24/04)	SECTION: Quality Assurance Procedure COMPANY LOCATIONS AFFECTED: All

1.1 Client Acceptance

QP 2.06 “Proposal Development Process” details the requirements regarding the preparation of new client proposals. Important financial processes included in QP 2.06 include the following (in order of completion):

- Chairman of Client Services Committee Notification;
- Conflict of Interest Check – Refer to PPM 10.01.10 available on the corporate Intranet;
- Creditworthiness Check (i.e., Dunn and Bradstreet [D&B]);
- Verification of State and Local Licenses and Certifications;
- Legal Division Contract Review; and
- Approval by the CSC Chairperson.

1.2 Initial Client Set-up

The Finance Division will assign a client-specific number and the client will be established in the accounting system when the requirements of QP 2.06 have been met, including submission of a properly completed Project Authorization (PA) Form.

1.3 Client Budgets

- Budget Development – The PIC develops a client budget and completes the client budget template during the 4th quarter of the current year for the upcoming year’s activities. All client budgets are formally reviewed by the President, CSC Chairperson, and PIC prior to final approval.
- Mid-year Budget Reviews – Actual first-half (Periods 1 through 6) financial performance is compared to budget for each client, and updated forecasts for the year are documented and formally reviewed by the President, CSC Chairperson, and PIC. Significant variances from budget are examined and appropriate action items are identified and assigned.

1.4 Client Financial Performance Review

The PIC is responsible for reviewing all client financial information. For Tier Clients, the PIC receives a client financial package each period that includes an executive summary, client profitability profile, budget vs. actual comparison, accounts receivable (AR) aging, fees held aging, bad debt reserves and interest charges, u-codes report, and a client marketing expense report. Upon review, the PIC will follow up on any matters that may lead to financial risk or future u-coding. The PIC is responsible for the prompt communication of these risks and future write-offs to the finance staff (Business Manager), and appropriate additional reserves are established. The PIC can access the following reports from My Reports on the corporate Intranet: PIC Summary Profile, Client Performance Summary, Aging of Accounts Receivable Summary, Aging of Accounts Receivable Detail, Aging of Fees Held Detail, and Bad Debt & Interest Detail.

2.0 PROJECT ACTIVITIES

2.1 Project Planning Management

During marketing efforts, project strategy and budgets are developed. This includes estimating each task, obtaining proposals from subcontractors, and selecting a project team. QP 2.01 – Project Planning and the BBL Project Manager’s Handbook provide guidance on the following PM responsibilities:

- overall project planning and development of a project plan;
- project budget, schedule, estimating, rate table/multiplier, performance project profit spreadsheets;
- selecting the project team;
- contracting the project – no work can begin until our client contract or written authorization to proceed and subcontractor contracts are signed and on file in the Legal/Finance Divisions (BBL standard client and subcontractor agreements – several forms can be accessed on the corporate

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Intranet); and

- timely submission of a PA form with project tasking detail.

2.1.1 Negotiating a Proper Scope of Work and Project Costs

Face-to-face meetings with the client to negotiate the scope of work and project costs are strongly encouraged. The client meeting is the PM's opportunity to scope the project and negotiate an effort that is responsive to the client's needs. If there is a difference between the client's needs and your perception of the client's true needs, the client meeting provides an opportunity to reconcile these differences, resulting in a mutually developed scope that accurately reflects the proper effort required.

2.1.2 Negotiating Fees for Other Disciplines

The PM must consult with all relevant disciplines prior to developing budgets or negotiating fees for those disciplines. The PIC reviews the proposed scope of work and budget.

2.1.3 Obtaining PIC Review

A client-accepted proposal can become an integral part of BBL's contract with the client. As such, the PIC or Officer in Charge of the proposal must review and approve any proposal.

2.1.4 Proposal Acceptance Statement

For clients that are not under a master service agreement, BBL's proposal must include the Proposal Acceptance Statement as a separate form embedded in the proposal document. The statement allows the client the flexibility to simply execute an agreement by accepting BBL's proposal and further agreeing to payment within 30 days, interest on late payments of 1% per month, and assignment of BBL's right to receive payment to secure financing.

2.2 Contracting the Project

A contract is essential for performing the services within a project, including items such as the standard of care with which BBL will perform certain services, the limits of BBL's liability, and the manner in which BBL will be compensated. The PM, PIC, and BBL's Legal Division are involved in negotiating the contract and the PIC or Officer in Charge must sign the contract.

2.2.1 Understanding of Terms and Conditions

The contract is the vehicle used to clarify both the client's expectations and the approach that BBL will use to meet those expectations. A key part of the process is clearly communicating BBL's total obligations to the client and the client's total obligations to BBL. The contract must clearly define the scope, budget, fees, payment terms, basis for fees (assumptions), and what constitutes extra services. A detailed scope of work is key to establishing mutual expectations.

2.2.2 Beginning Work with a Signed Contract

No work is to begin without a signed contract. Beginning work without a signed contract requires the explicit approval of the President. BBL cannot recognize revenue (or recognize revenue in excess of the authorized contract amount) on a project without a signed contract or change order. Such revenue will be recognized when the signed contract or change order is received in Finance. Beginning work without a signed contract exposes BBL to significant financial and legal risk.

2.2.3 BBL Standard Agreements

BBL has several standard agreement forms that are available on the corporate Intranet. The BBL Standard Agreement includes the following: Cover Page, General Provisions, Scope of Services,

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Statement of Compensation (including a sample invoice), and Change Order Form. The Statement of Compensation is available for a variety of fee structures. For pricing purposes, the Finance Division has average hourly salaries available for each grade level (for multiplier projects), equipment rental rates, health and safety supplies rates, fee schedule for professional services (for time and material projects), and current (these rates/fees change annually) Tier I, II, and III rate tables by BBL-billings level.

All client-proposed contracts must be sent to BBL's Legal Division, who will review the client's agreement and help negotiate acceptable terms and conditions.

2.2.4 Subcontractor Agreements (also see section 2.7)

Contracting requirements regarding the use of subcontractors are as follows:

- Review the client contract for subcontractor authorization conditions.
- Review the client contract for pass-through terms and conditions by which subcontractors must abide (e.g., Health & Safety, Insurance, Confidentiality).
- If BBL has not previously worked with the potential subcontractor, request qualifications/ references and contact the Finance Division to request a creditworthiness check.
- Use the appropriate agreement for the type of work being done by the subcontractor. BBL and BBLES have both Standard and Professional Subcontractor Agreements that are available on the corporate Intranet.
- Use a BBL / BBLES Agreement. Do not use an agreement provided by the subcontractor.
- The PM is required to obtain certificates of insurance for all of the project's subcontractors.
- Any deviation from these procedures requires approval of the Legal Division and the PIC or Officer in Charge.

2.3 Project Plans

All projects should have a documented project plan, and the level of detail must reflect the scope/cost of the project. Formal project plans are required for all projects with a total contract value of greater than \$25,000 (gross revenue). The purpose of the project plan is to appropriately document planning activities to be performed in order to meet or exceed client expectations, mitigate risk, maximize the potential for profit, and to communicate to the project team essential facts about the project and the qualitative considerations that influence the project work efforts. Project plans include the following:

- project organizational structure;
- scope and client deliverables (e.g., reports, designs, litigation services);
- risk management;
- communication planning;
- project team requirements and selection;
- task details;
- demonstrates that the conflict of interest (COI) check has been completed;
- subcontractor information; and
- identification of appropriate and applicable BBL QPs.

The following guidelines are used when outlining a project's tasks:

- Billing tasks reflect the client's requirements for invoicing the project. Often the tasks are outlined in the proposal letter or client contract.
- Avoid over tasking. Over tasking results in the rapid escalation of improperly charged time due to confusion about where time will be charged by the project team.
- New tasks are added to track costs associated with each out-of-scope work effort encountered during the course of the project. The tasks are authorized by the client with a change order.

- When appropriate, billing tasks are established sequentially during the life of the project to allow completed tasks to be closed.
- When appropriate, billing tasks divide the project into logical work efforts to allow tracking against deliverables and/or milestones.

2.4 **Project Authorization and Set-up**

Project Authorization is required to obtain a project number. The PM must submit to the Finance Division a Project Authorization Package consisting of the following:

- Project Authorization Form;
- Scope of Services/Cost Proposal;
- Invoice Project Profile Form;
- Copy of the signed contract; and
- Project Plan – (Note: Recommended for all projects, required for projects with a contract value greater than \$25,000).

Once a project number is issued, labor and other expenses can be charged/tracked to the project. Revenue cannot be recognized on the project until a signed contract is submitted to the Finance Division. Delayed revenue recognition due to the lack of contractual authorization creates legal risks, distorts the firm's financial performance, results in the loss of the time-value of money, and can produce write-offs.

The Project Authorization Package can be obtained from the corporate Intranet or from the Finance Division. Packages must be submitted to the Finance Division by the earlier of (i) the start of work on the project, or (ii) 5:00 PM on the last Thursday of the pay period during which the project starts. This deadline allows time for setting up a project in the accounting system so that time and direct costs can be charged to the project for services performed during the start-up pay period.

2.4.1 **Project Authorization Form**

The Project Authorization (PA) Form provides the following information:

- initiates a project number for charging labor and other direct costs;
- provides client data and lists project tasks and budgets assigned by the PM;
- identifies authorized individuals for invoice approval and client contact; and
- provides the Finance Division with updated information when project tasks or client billing information requires revision.

2.4.2 **Scope of Services/Cost Proposal**

The Scope of Services/Cost Proposal describes the project scope of work and proposed costs, including task-specific dollar breakdown for labor, expenses, and subcontractor charges.

2.4.3 **Invoice Project Profile (Form)**

The Invoice Project Profile provides the following information:

- step-by-step description of the client's invoice review and approval system;
- client requirements that may affect BBL's net 30-day payment requirement; and
- a complete picture of the total collection process, allowing BBL to understand the client's internal invoice processing system.

2.4.4 **Copy of Signed Contract**

A copy of the signed contract must be included with the Project Authorization Package. The following represent acceptable contract forms:

- BBL/BBLES Professional Services Agreement (PSA);
- BBL/BBLES Letter Agreement;

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- Client Standard Contract; and
- Client Purchase Order (PO).

2.4.5 Revising Project Information

To initiate revisions to project tasks, all billing information, change orders, and/or revised purchase orders are included on a new PA Form. The project number must be referenced, the revised information must be filled in, and any necessary subtotals and totals-to-date must be updated.

2.5 Subcontractor Set-up

QP 2.02 – Procurement provides guidance on subcontracting and is available on the corporate Intranet.

2.6 Managing the Budget

2.6.1 Monitoring Project Charges

After the project has been authorized, the PM is responsible for verifying that the project is set up and budgeted correctly in the accounting system. The PM reviews the Combined Detail Reports biweekly to verify that time is charged correctly to the project. Time charged to the wrong task must be transferred to the correct task by the PM using the Electronic Billing System (EBS), and the team member that charged the wrong task must be informed of the error and instructed by the PM regarding the proper tasks to charge for future work.

2.6.2 Monitoring the Budget

The PM must monitor EBS and be constantly aware of the percent spent on the project versus the budgeted amount. All labor/expenses posted to the accounting system are immediately visible in EBS.

2.6.3 Accounting Cycle

Each BBL Accounting Period (Billing Period) is four weeks in duration and is segmented into two 2-week Pay Periods. BBL collects labor and expense data through the Remote Data Entry (RDE) system at the end of each Pay Period. Labor and expenses are then posted to the accounting system within three days. Accounts payable transactions (i.e. vendor and subcontractor invoices and payments) and Accounts Receivable transactions (i.e. invoice postings and cash receipts) are posted to the accounting system daily. As soon as the information is posted in the accounting system, it is immediately available to the PM through EBS and Project Management reports.

2.6.4 Standard Reports

The following reports are available from My Reports on the corporate Intranet:

- *Active Project Billing Report* – Lists all of a PM's projects and their status relative to approved contract values. This report shows the approved Contract Amount, Billings to Date, Retainage, Current Fees Held, Balance to be Billed, and % Complete for each project. This report is updated every Tuesday.
- *Aging of Accounts Receivable Summary* – Provides an aging of outstanding Accounts Receivable by project for each PM. This report shows the total balance owed on each project, as well as a breakdown of this total in 28-day groupings. PM's should contact their Business Manager or Account Specialist for assistance in collection matters. This report is updated daily.
- *Aging of Accounts Receivable Detail* – Provides a more detailed aging of outstanding Accounts Receivable by project for each PM. This report provides a breakdown by invoice for all outstanding receivables including the invoice amount, invoice date, any partial payments, the number of days outstanding, and notes regarding collection activities. This report is updated daily.

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- *Aging of Fees Held* – Provides an aging of all unbilled charges (Fees Held) by project for each PM. This report shows the total balance of Fees Held on each project as well as a breakdown of the total into 28-day groupings. This report is updated daily; however it is most useful at the end of each Pay Period once labor has been posted. It will then provide a good estimate of what the pending charges for each invoice will be on a biweekly basis.
- *Bad Debt and Interest Detail* – Provides a detailed breakdown of Bad Debt and Interest charges (as shown on the PM Summary Profile) by project for each PM. It includes Accrued Bad Debt, Actual Bad Debt, Recoveries of Bad Debt, and Interest Expense on a current period and YTD basis. This report is updated once per period.
- *Deferred Revenue* – Summarizes all projects that have exceeded their authorized contract values for each PM. This report shows the total contract value as well as the dollar amounts in excess of the contract value on a Current Period, Year-to-Date, and Inception-to-Date basis. This report is updated every Wednesday.
- *Project Manager Detailed Profile* – Provides detail on Gross Revenue, Total Labor Revenue (TLR), Effective Multiplier, Bad Debt and Interest, and Profit by project for each PM. This report is updated once per period.
- *Project Manager Scorecard/Detail Report* – This report details the "BAD METRICS" performance for a PM's projects sorted from highest to lowest "BAD METRICS." The "BAD METRICS" are Aged Receivables, Aged Fees Held, Ceiling Issues, Bad Debt and Interest Accruals, Actual Bad Debt, and U-Codes. This report is updated once per period.

2.6.5 Out-of-Scope Charges

Out-of-scope services are charged to separate tasks. Until the client provides written approval of the out-of-scope item, tasks are set up as u-coded tasks through the project authorization process. This facilitates identifying and billing these items once the client authorization (change order) is received.

2.6.6 Project Plan Updates

Whenever circumstances change and have a significant impact on the project plan, the PM must update the project plan to demonstrate how the project will be completed within budget.

2.6.7 Discuss Potential Overruns with the PIC

If at any time the PM believes that the project will not be completed within budget, the matter must be discussed with the PIC or Officer in Charge. This discussion occurs before the project is over budget, when there is time to address the problem.

2.7 Obtaining Authorization for Scope Changes

Many projects typically require additional BBL services due to developing conditions during a project, often in response to information learned during the project. Changed conditions may result from client-directed changes or an omission in BBL's original scope of services. BBL is entitled by contract to be paid for extra services, if, and only if, we follow the contract procedures for obtaining authorization for extra services.

2.7.1 Preparing the Client for Extras

During the contracting stage, the PM and client should discuss the possibility of extra services and the contract should have provisions for authorizing additional agreed-upon services. Failing to negotiate extra services is a leading cause of project overruns and creates financial and legal risks if work is performed. The PM must fully understand the contracted scope of service in order to identify out-of-scope or extra services.

2.7.2 Obtain Authorization for Scope Changes before Performing the Work

The contract requires that authorization for extra services be obtained before additional work is

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performed. Extra services must be documented and presented to the client for approval on a timely basis before any additional work begins. The client's documented approval is then submitted to the Finance Division. Prior to performing any work that the client has not agreed to pay for, approval by the PIC or Officer in Charge is required.

2.8 Billings

2.8.1 Electronic Billing System (EBS)

Refer to the "Using EBS" course on the Finance Homepage located on the corporate Intranet for detailed EBS instructions. The Invoicing and Financial Reporting Calendar is also available on the Finance Homepage (Calendars) on the corporate Intranet.

There is a 2½-day PM review and approval window for EBS, from the Tuesday following the close of the Accounting Period at 9:00 AM until the following Thursday at 1:00 PM. During this window, PMs are required to review the charges in EBS, finalize the charges to be billed, and approve the current period invoice for his/her respective projects.

The AS will generate the final invoice and forward it to the PM for review and approval.

2.8.2 Cover Letters/Invoice Approval

PMs must review the final invoice and return all cover letters and /or additional information to be included with the invoice to their respective Account Specialist within two business days of receiving the final invoice. The Account Specialist will then mail the invoice to the client.

2.9 Collections

2.9.1 Accounts Receivable Collection Process

BBL's collection program aims to achieve the shortest collection turnaround, consistent with satisfactory sales volume and client goodwill. The collection process includes the following activities:

- Obtain credit approval (see Section 1.1 Client Acceptance).
- Communicate our credit terms and credit policy to the client. To eliminate any misunderstanding, clearly communicate to the client our invoice format and 30-day payment requirement. Obtain a signed agreement from the client accepting those terms (see Section 2.1.4 Proposal Acceptance Statement).
- Communicate with the Legal and Finance Departments. If the PM wants an AS to make collection calls, the corresponding box must be checked on the PA Form.
- Communicate regularly with clients regarding payment issues. Resolve any disputes quickly. A client may use a minor dispute to withhold a substantial payment. Insist on immediate payment of any undisputed portion and indicate that the balance will be negotiated. If the client raises any disputes about quality of service as a basis for nonpayment, contact the Legal Department immediately. Professional liability insurance issues are raised by such arguments and appropriate legal steps must be taken. Also, thank clients for timely payment.
- Do not retreat from corrective action with persistently delinquent payers. Be consistent and persistent. Engage the Business Manager and/or Legal Department for assistance in collection activities.
- Monitor the level of overdue balances. The Aging of Accounts Receivable Summary and Aging of Accounts Receivable Detail noted in Section 2.5.4 are used to monitor Accounts Receivable for overdue balances.

2.9.2 Write-offs

If an Accounts Receivable balance due to BBL is deemed uncollectible, it may be written off and charged to bad debt expense. Accounts Receivable balances may be written off only after all

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collection efforts have failed, including Finance and Legal Division involvement. Requests for write-offs must be submitted to the Finance Division in writing and signed by the PIC using the Accounts Receivable Write-Off Form available on the Finance Division's Homepage on the corporate Intranet.

2.10 Document Management

It is the PM's responsibility to define how documents will be managed during and at the completion of the project, in accordance with QP 1.02 – Document and Record Management, available on the corporate Intranet. This information must be clearly communicated to the project team at the inception of the project (e.g., kickoff meeting). The PM may assign a file coordinator for the project so that the project guidelines are followed.

2.11 Project Close-out

All projects to be closed require a completed Project Close-out Form, available from the Finance Homepage on the corporate Intranet. This form is also used to close-out or deactivate specific tasks of a project. The following conditions apply to project and/or task close-outs:

- A project or task cannot be closed out until there are no unbilled charges in that project or task.
- If an entire project is being closed-out, all phases of the project must be complete and unbilled charges must be zero. A project that still has an outstanding Accounts Receivable balance can be closed by leaving the top level (i.e. 5-digit project number only) of the project open until all payments have been received. All tasks below the top level of the project will be closed to prevent the project from accepting any additional charges. The top level will be closed out when final payment has been received.
- Inactive task(s) can be reopened at a future date to again receive charges as a billable project.
- Completed Project Close-out Forms must be signed by the PM and submitted to the Finance Division. All forms will be processed the Thursday prior to the close of each Pay Period.

3.0 BBL CODE OF ETHICAL BUSINESS CONDUCT

BBL has established a Code of Ethical Business Conduct to protect the reputation and integrity of the Company and its employees, and to assist and guide its employees in following uniform standards of ethical conduct. It is each employee's duty to read the code, become familiar with its provisions, act in a manner that is consistent with the code, and to resolve any doubt as to the meaning of the code in favor of good ethical judgment. All BBL Staff are required to acknowledge, in writing via the annual BBL ethics disclosure and certification document, that they have read the Company's ethics code and are not aware of any violations of the code. Violators of the code will be subject to discipline – up to and including termination. BBL is committed to conducting its business affairs fairly, legally, impartially, and in an ethical manner and has an excellent reputation for professionalism and integrity. Any conduct that harms our reputation for honesty and quality must be avoided. Please refer to the BBL Code of Ethical Business Conduct located on the corporate Intranet or contact the Legal Division with any questions.

4.0 CLIENT ETHICS POLICIES

All BBL Employees must be familiar with their individual clients' ethics policies and undertake no conduct in violation of those policies. Violators of client ethics policies are subject to discipline – up to and including termination. All available and applicable client ethics policies are posted on the Legal Division's Homepage located on the corporate Intranet. The PIC is responsible for posting a current version of each of his or her client's Codes of Ethics on this site.

- END OF PROCEDURE -

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Chief Executive
Authorization: _____

Date: _____

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STATEMENT OF POLICY:

It is BBL's policy that all employees understand and comply with all required Financial Controls and Sound Business Practices. Such compliance is critical to our goal of meeting or exceeding our internal and external financial requirements and obligations.

Purpose

The purpose of this quality procedure (QP) is to promote compliance with BBL's common financial processes. These processes contribute to the firm's fiscal health and enable us to make sound business decisions that benefits BBL's employees, clients and stockholders.

Responsibilities

Division Head – The Division Head is ultimately accountable for implementing and strictly enforcing this QP across their appropriate division(s).

Project Manager (PM) – The PM is responsible for all financial matters that exist for a project.

Project Team Members – All team members are responsible for accurately recording project time, expenses, and project logs on a timely basis. Team members must understand and comply with client ethics policies.

All BBL Staff – All BBL staff are responsible for submitting accurate timesheets, expense reports, and mileage logs on a timely basis in accordance with established BBL deadlines and policy.

DESCRIPTION OF PROCEDURE

BBL's financial processes have been established at the client, project, and staff levels using a project life-cycle approach. Financial processes are designed so that BBL operates using sound business practices that meet client requirements, internal and external financial reporting requirements, and government compliance requirements. Monitoring and reporting activities are designed to aid BBL staff in complying with these processes and provide a framework for making sound business decisions.

1.0 BBL Staff Financial Responsibilities

1.1 Timesheets, Expense Reports, Mileage Logs

All BBL Staff are required to accurately and completely represent the transactions recorded on Timesheets, Expense Reports, and Mileage Logs. All original Timesheets, Expense Reports, and Mileage Logs must be approved by the appropriate department heads and submitted to Finance by 11:00 AM the first business day subsequent to the end of each Pay Period. Employees are responsible for maintaining copies of their Timesheets and Expense Reports. Please refer to the following BBL Policy and Procedures: 8.01.01 Timesheets, 8.01.02 Expense Reports, 8.01.03 Mileage, and 8.01.04 Equipment Rental.

1.1.1 Timesheets

Approved timesheets are due in Finance by 11:00 a.m. on the first business day subsequent to the end of each Pay Period. There are three types of timesheets, which include the following:

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- Common Paymaster Timesheet – this is used for recording time for direct and indirect labor charges within the Engineering Company (instructions are included on the back of the form).
- Supplemental Timesheet – this is used for projects that require submission of timesheets as part of the client invoice (these hours are recorded on the Common Paymaster Timesheet).
- Other Companies Timesheet – this is used when a BBL employee works directly as an employee for a related nonengineering company. A list of the related companies is included on this timesheet (instructions are included on the back of the form).

Employees enter their time into the Remote Data Entry (RDE) System on a daily basis, submit a timesheet every two weeks to their Division Head for approval, and are responsible for maintaining copies of their completed timesheets. Employees cannot approve their own timesheet.

1.1.2 Expense Reports

Approved Expense Reports (billable and nonbillable) are due in Finance by 11:00 a.m. on the first business day subsequent to the end of each Pay Period.

Travel, meal, and lodging expenses must be substantiated by the amount, date, location, and business purpose. Substantiation of entertainment expenses requires documentation of these same four elements, plus the business relationship of person or persons entertained. All receipts must be attached to the original Expense Report, and employees are responsible for maintaining copies of their completed Expense Reports. All expense reimbursements must comply with client ethics and/or purchasing policy requirements.

Employees must submit their Expense Report to their Division Head for approval. Employees cannot approve their own Expense Report.

1.1.3 Mileage Logs

BBL reimburses business mileage for all employees using their own vehicles at the current IRS-approved rate. Business mileage is either billed to a client project or divisional overhead project number and considered to be miles driven from the office to/from the following, but is not limited to:

- project sites;
- airport for business travel;
- errands related to business (i.e., post office, bank, Federal Express, etc.); and
- regional offices.

Approved Mileage Logs are due in Finance by 11:00 a.m. on the first business day subsequent to the end of each Pay Period. Employees fill out a Mileage Log every two weeks. Mileage must be substantiated by cost, time, place, date, and business purpose. Employees are responsible for maintaining copies of their completed Mileage Log.

Employees must submit their Mileage Log to their Division Head for approval. Employees cannot approve their own Mileage Log.

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1.2 BBL Code of Ethical Business Conduct

BBL has established a Code of Ethical Business Conduct to protect the reputation and integrity of the Company and its employees, and to assist and guide its employees in following uniform standards of ethical conduct. It is each employee's duty to read the code, become familiar with its provisions, act in a manner that is consistent with the code, and to resolve any doubt as to the meaning of the code in favor of good ethical judgment. All BBL Staff are required to acknowledge, in writing via the annual BBL ethics disclosure and certification document, that they have read the Company's ethics code and are not aware of any violations of the code. Violators of the code will be subject to discipline – up to and including termination. BBL is committed to conducting our business affairs fairly, legally, impartially, and in an ethical manner. BBL has an excellent reputation for professionalism and integrity. Any conduct that harms our reputation for honesty and quality must be avoided. Please refer to the BBL Code of Ethical Business Conduct located on the corporate Intranet or contact the Legal Division with any questions.

1.3 Client Ethics Policies

All BBL Employees must be familiar with their individual clients' ethics policies and undertake no conduct in violation of those policies. Violators of client ethics policies are subject to discipline – up to and including termination. All applicable client ethics policies are posted to the Legal Homepage located on the corporate Intranet for review. The PIC is responsible for posting a current version of each of his or her clients' Codes of Ethics on this site.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	TOPIC:		
	HEALTH AND SAFETY PROCESS		QP 2.10
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STATEMENT OF POLICY:

It is BBL's policy to provide and maintain a safe and healthful work environment for all of its employees in accordance with industry standards and legislative requirements. The Firm strives to prevent, eliminate, or control foreseeable hazards that may result in personal injuries, illness, fires, security losses, and property damage/accident losses. We expect each employee to make a personal commitment toward accident prevention as a way of life.

Purpose

The purpose of this quality procedure (QP) is to identify the roles and responsibilities regarding health and safety activities for all staff members. This QP is intended to guide all BBL staff in implementing the Firm's Health and Safety (H&S) Program and to provide information on expectations, goals, and available resources.

Responsibilities

Officers and Principals in Charge (PICs) – have the overall responsibility for applicable BBL client-project management activities and providing guidance to project managers for work activities within their area of responsibility; such that BBL staff, applicable subcontractors, and affected personnel have the appropriate training, equipment, and understanding of their role in BBL's H&S Program, the Loss Prevention System (LPS), applicable project planning documents, and related information to complete activities in a safe and healthy manner. PICs are responsible to implement and communicate a Client-specific Health and Safety Plan. Officers and PICs perform stewardship activities and verify that client and BBL LPS target goals are met.

Corporate Health and Safety (CHS) Group – provide technical guidance to BBL management and staff on implementing BBL's H&S Program and the LPS. The CHS group reviews, revises, and approves Health and Safety Plans (HASPs), health and safety-related Standard Operating Procedures (SOPs), LPS requirements, and other guidance, as required, to meet regulatory requirements, client expectations, and the Firm's goals. The CHS group provides technical assistance regarding health and safety-related activities, audits project activities for compliance with BBL's H&S Program, develops LPS training materials, and provides training.

Health and Safety Coach – provides direction in safety procedures and issues to the employees in the Business Units to which they are assigned. The coaches provide guidance in Program implementation, help in LPS tool use, and provide review and feedback on safety issues. The coaches will work with members of the CHS group to address issues, investigate incidents and near misses, and monitor improvement.

Project Managers (PMs) – conduct all project activities according to applicable regulatory requirements, industry standards and recognized best practices, BBL SOPs, LPS requirements, and client expectations. The PM is responsible for the development and implementation of a project-specific Health and Safety Plan (HASP). The PM continually evaluates project activities to provide an environment that is free of recognized hazards and provide a mechanism for employees to report unsafe conditions or activities without fear of reprisal. The PM also verifies that team members are adequately trained and familiar with regulatory requirements, SOPs, LPS requirements, and applicable work instruction for the activities that they are assigned.

BBL Personnel – work in a safe and healthy manner according to regulatory requirements, project specifications, BBL standards (e.g., SOPs, work plans), LPS requirements, and client-specific expectations. It is the responsibility of all BBL personnel to stop work if an imminent hazard exists and report any unsafe or unhealthy conditions to their supervisor. All BBL personnel will participate in BBL's H&S Program, LPS activities, and provide constructive feedback to the CHS group.

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DESCRIPTION OF PROCEDURE

1.0 General Health and Safety Practices

Health and safety activities at BBL are addressed by implementing the company-wide Health & Safety Manual procedures and task-specific SOPs, and developing and implementing a project-specific HASP for applicable field activities. General health and safety SOPs and guidance for all BBL employees are available on the H&S/LPS web page, which provides general guidance, monthly safety alerts, access to health and safety-related documents, and references additional health and safety-related information.

2.0 Client-Specific Health and Safety Plans

BBL's focus on our clients extends into the Health and Safety arena. Each Tier I and II client team will develop, implement, and communicate a client-specific Health and Safety Plan. This Plan is instrumental in identifying and communicating all client-specific requirements and expectations placed on us by our respective clients. A template for the creation of this Plan is available within the Health and Safety webpage on the corporate Intranet.

3.0 Project-Specific Work Activities

3.1 HASPs – site-specific HASPs are required for all projects that require field or construction-related work. The Project Manager is responsible for the development of the HASP. The HASP provides detailed instruction on project-specific health and safety-related hazards and controls and are created and approved prior to beginning any project-related activities that are covered within the HASP.

All HASPs require a fully executed approval page located in the front of the HASP that includes approval signatures of the CHS representative, Project Manager, and designated H&S Site Supervisor.

3.2 Health and Safety SOPs – health and safety-related SOPs are developed for various BBL activities. All employees must review and follow the applicable SOP during performance of these activities. If a specific SOP is not available, regulatory, client, and project specifications will apply.

4.0 Loss Prevention System

4.1 General Overview

LPS is a management system for safety. LPS includes a set of tools that helps identify and eliminate the factors that lead to safety, health, and quality-related deviations or losses. All BBL employees are expected to be trained on LPS and use the tools according to the LPS Program guidance.

4.2 LPS Tools

4.2.1 Safe Performance Self Assessment (SPSA) – a three-phase risk assessment tool that requires every employee to ask the following questions prior to starting an office-based or field-related task:

- What can go wrong and what will happen if something goes wrong?
- Do I have the training and equipment to do this task safely?
- How do I eliminate or reduce the risk?

Following the SPSA, all staff must then take the appropriate action to perform the task safely.

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- 4.2.2 Job Safety Analysis (JSA) – a simple process to break down a job into smaller tasks, identify potential hazards, and provide written safe work procedures to avoid hazards.
- 4.2.3 Loss Prevention Observation (LPO) – a systematic standardized tool for observing a work process to determine if the job is being done safely according to specified standards.
- 4.2.4 Loss and Near-Loss Investigation (LI & NLI) – a process of investigating losses and near-losses to identify the root causes and contributing factors that lead to incidents, near-misses, and questionable behaviors. Practical, effective solutions must then be implemented to prevent recurrence.
- 4.2.5 Root-Cause Analysis – a systematic analysis that leads investigators and observers through a range of possibilities for factors that cause or contribute to incidents and questionable behaviors. Typically, 90% of root causes are personal or behavioral factors and 10% are job factors or conditions at the work site.
- 4.2.6 Stewardship – the daily, weekly, and monthly management of the use of LPS tools, including analysis of the results. Stewardship includes quality checks on the tools and the timeliness and effectiveness of the solutions.

5.0 Continuous Improvement

Safety is one of our most important corporate values, and continuous improvement is always our goal. All employees are encouraged to provide suggestions, comments, and feedback to their supervisor, the CHS group, Health and Safety Coach, or through BBL's suggestion system.

- END OF PROCEDURE -

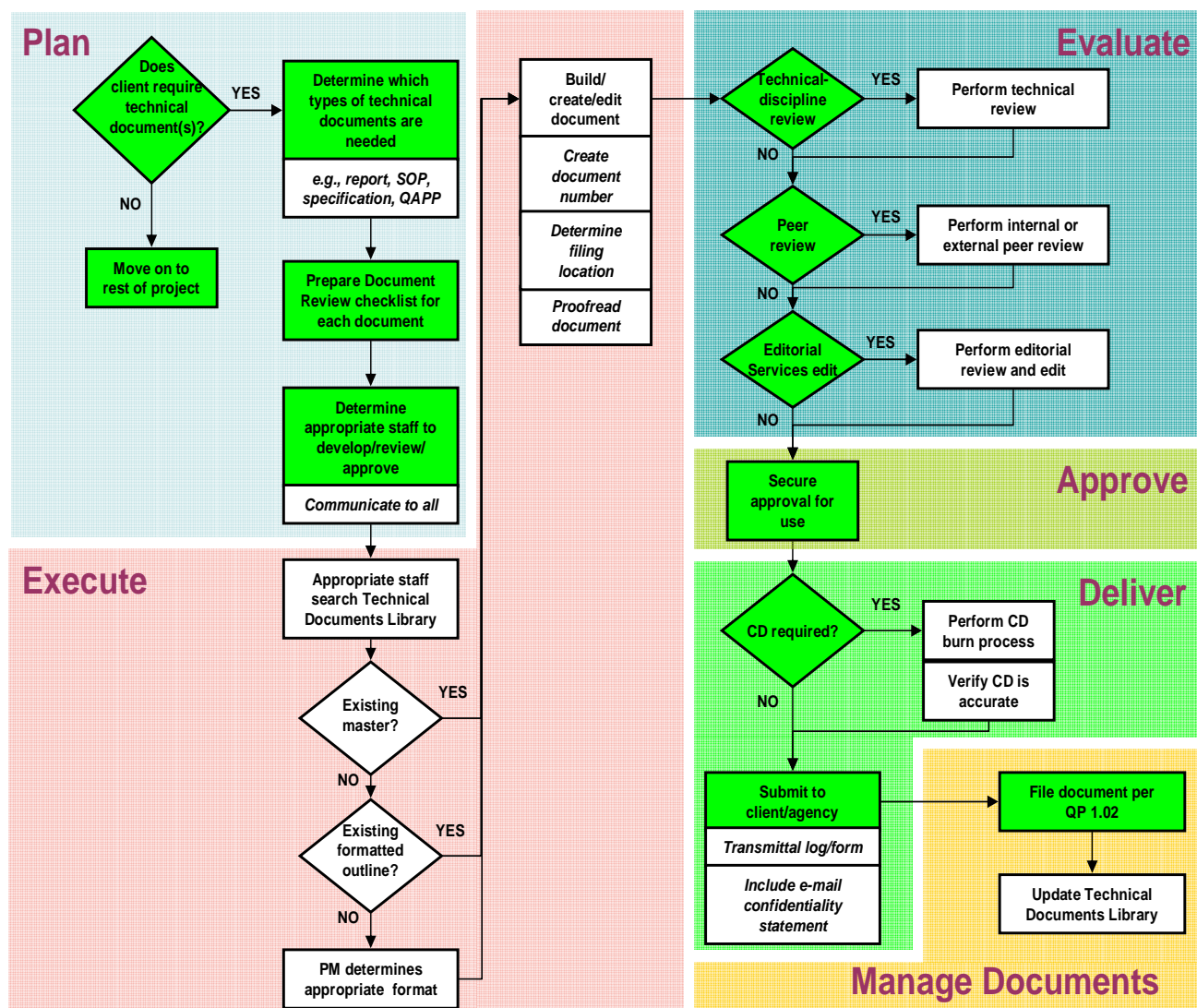
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BBL	<div> <div> TOPIC: TECHNICAL DOCUMENT PROCESS QP 3.01 </div> <div> <div> Revision C (04/23/03) </div> <div> SECTION: Quality Assurance Procedure </div> <div> COMPANY LOCATIONS AFFECTED: All </div> </div> </div>
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STATEMENT OF POLICY:

It is our Firm’s Policy that all external documents must fulfill client and regulatory requirements and be technically accurate and legally defensible. This Quality Procedure (QP) is applicable to technical documents¹ produced for existing and potential clients.



¹ Technical documents include, but are not limited to, proposals, statements of qualifications, reports of all kinds (e.g. phase I/II site assessment reports, remedial investigation plans and reports, engineering evaluation/cost analysis reports, risk assessment reports, monthly status reports, contamination assessment plans and reports, spill response reports, tank closure assessment reports, industrial hygiene reports), work plans of all kinds (e.g., remedial design, remedial action), standard operating procedures (SOPs), feasibility studies, contract documents, contract drawings, quality assurance project plans, field sampling plans, sampling and analysis plans, institutional control plans, site management plans, waste management plans, health and safety plans, environmental impact analyses, environmental impact statements, requests for proposals/bids, change of scope letters, specifications, permit applications, technical memoranda, SPCC plans, and white papers.

BBL	TOPIC:		
	TECHNICAL DOCUMENT PROCESS		QP 3.01
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			All

1. Purpose

The objective is to produce documents that are of consistent high quality. The requirements specified for content and format enhance the consistency of documents produced throughout the Firm. These specifications are provided to enable Project Managers and project staff to follow a common process in planning, executing, evaluating, approving, delivering, and managing documents. This QP provides the minimum standard that we must achieve; additional client contractual or regulatory requirements may take precedence over the specifications provided herein.

2. Responsibilities

Principal in Charge

The Principal in Charge (PIC) is ultimately accountable for the documents that we provide to our clients. The PIC is responsible for verifying that the Project Manager is fulfilling the responsibilities identified in this QP.

Project Manager

The Project Manager is responsible for administering this QP for all technical document production.

Project team personnel

Project team members assigned to produce or contribute to a technical document are responsible for meeting the requirements of this QP.

DESCRIPTION OF PROCEDURE:

This procedure provides a common process for the six stages of the technical document process: planning, execution, evaluation, approval, delivery and record management. This process is summarized in the flowchart found on page 1 of this QP and is outlined in more detail below.

1. Planning

The Project Manager is responsible for:

- determining whether one or more technical documents are required for a particular project or project task;
- identifying the number and type of technical document(s) required;
- preparing a Document Review Checklist (QF 3.01.01) for *each* document;
- identifying appropriate QPs or additional guidance needed to develop technical documents (e.g., HASPs, QAPPs);
- determining the appropriate staff to execute, evaluate, and approve each document, keeping in mind that additional approvals are required for certain technical documents (e.g., HASPs, QAPPs);
- establishing a project schedule that allows sufficient time to perform each task, and communicating this schedule to the project team (including the appropriate reviewers and approvers);
- determining the client and/or regulatory agency delivery requirements, including the number of copies, the individual to whom the copies will be transmitted, and whether the technical document must be labeled “Confidential,” “Draft,” or “Attorney/Client Privileged.”
- identifying the delivery medium (i.e., electronic, hard copy, or both); and
- determining the record management (i.e., filing) requirements for each document.

BBL	TOPIC: TECHNICAL DOCUMENT PROCESS QP 3.01	
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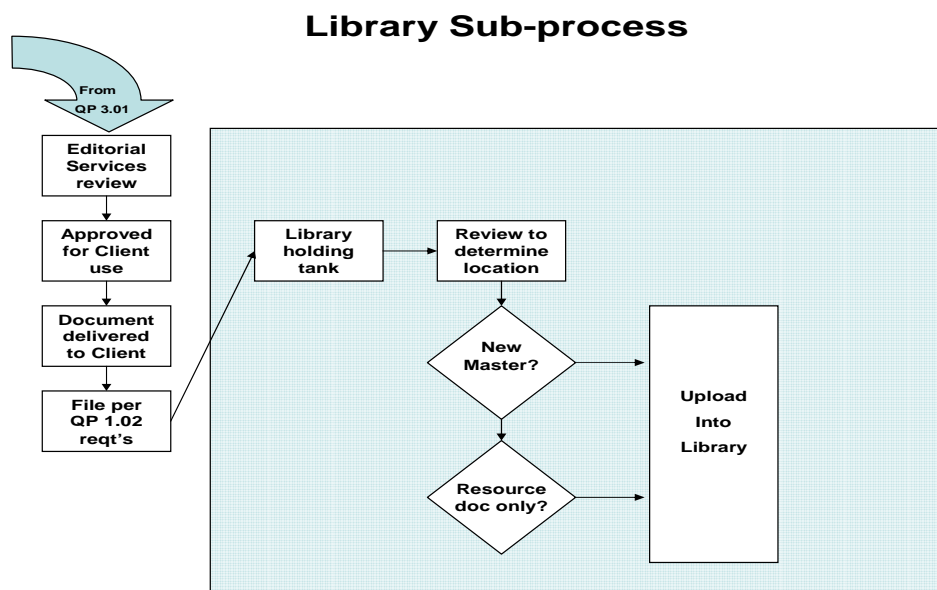
To help meet our Firm's commitment to providing consistently high-quality services to our clients, the following three steps of review must be considered for all technical documents:

- **Discipline-specific Review:** It is the responsibility of the Project Manager to verify that text referring to each technical discipline represented in a document has been reviewed by an individual qualified in that discipline. For instance, a report presenting information and data in hydrogeology, geotechnical engineering, and risk assessment may not be reviewed solely by a risk-assessment-qualified person. Expertise in all three disciplines is required for proper review.
- **Peer Review:** Independent peer review (including BBL personnel not involved on the project team or peers located outside of BBL) should be considered for each document, and is recommended for those that present state-of-the-art technical activities, will undergo regulatory review, or present the results of projects having significant potential for litigation. Peer review is outlined in the Quality Assurance Evaluation (QP 4.05).
- **Review by a Member of the Editorial Services Group:** Members of the Editorial Services Group review the technical document for clarity, understanding, consistency, grammar, punctuation, and style and assist with document organization and writing, as necessary.

2. Execution

Documents must fulfill the scope of work, meet contractual requirements, and satisfy applicable regulatory, legal, client-specific, and internal BBL requirements.

A member of the project team performs a thorough search of the Technical Documents Library, which contains specific guidance and current, approved masters and templates of many kinds of technical documents. If a master and/or template exists within the Technical Documents Library, it must be used (or adapted, as necessary) for the development of the new document.



If specific guidance does not exist, the Project Manager determines the scope, content, and format of the document, which is then prepared by the project team.

BBL	TOPIC:		
	TECHNICAL DOCUMENT PROCESS		QP 3.01
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			All

A BBL Document Technician (or equivalent) proofreads and makes the necessary formatting adjustments to the document, assigns it a BBL document number, and files it in accordance with QP 1.02 – Document and Record Management, located on the corporate Intranet.

The Project Manager delivers the document (electronic or hard-copy) to the appropriate discipline-specific reviewer, peer reviewer, or member of the Editorial Services Group.

It is recommended that all corrections and recommendations be made using the Microsoft® feature “Track Changes” and that one electronic copy of the document be routed sequentially to all reviewers.

3. Evaluation

Technical documents shall be reviewed by staff identified by the Project Manager.

Each reviewer will evaluate the assigned section(s) of the document and clearly indicate his or her corrections and recommendations on the document. Each reviewer must be cognizant of the review schedule and forward the document to the individual designated by the Project Manager.

The author will review each reviewer’s corrections and recommendations, incorporating those with which he or she is in agreement with and working with the reviewer to resolve areas of disagreement. If agreement is not possible, the Project Manager will decide the final disposition of a comment unless the PM is the author or reviewer, in which case the next senior level of management should decide the final disposition.

The Project Manager is responsible for verifying that all sections have been reviewed and all comments have been resolved. (Once again, “Track Changes” facilitates this review.)

As a final step in the review process, the Project Manager will update the Document Review Checklist (QF 3.01.01) to confirm that all evaluations have been completed and that all criteria in Section 4 have been addressed.

4. Approval

Technical documents must be approved for issuance by the individuals identified in the Document Review Checklist. These individuals will indicate their approval by signing the Document Review Checklist in Section 5.

A signature/approval page will be prepared if required by the client or regulatory agency and provided to the client during the delivery phase. This page is often included in the front of deliverables such as reports and contract documents.

5. Delivery

Increasingly, we provide technical documents to our clients in electronic format on Compact Disc (CD). It must be verified that the CD is in working order, has not been corrupted, and contains all of the intended documents.

Final documents will be accompanied by a letter of transmittal that identifies, as applicable, the project name and number; indicates whether BBL considers the document to be a partial or full satisfaction of project requirements; and states the document title, number of copies transmitted, and BBL personnel to contact with questions concerning the documents. The transmittal letter will be signed by the Project Manager or designee, and, when necessary, the PIC. The document will be distributed as specified in the contract, and to others as directed by the client.

BBL	TOPIC: TECHNICAL DOCUMENT PROCESS QP 3.01
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Electronic mail transmittals (i.e., email) must be accompanied by BBL's standard legal language for transmittals.

The information contained in this e-mail message is intended only for the personal and confidential use of the recipient(s) named above. This message may be an attorney-client communication and, as such, is privileged and confidential. If the reader of this message is not the intended recipient or an agent responsible for delivering it to the intended recipient, you are hereby notified that you have received this document in error and that any review, dissemination, distribution, or copying of this message is strictly prohibited. If you have received this communication in error, please notify us immediately by e-mail, and delete the original message.

6. Document and Record Management

Copies of documents submitted external to BBL must be maintained as a part of the project record in compliance with QP 1.02. A copy of the Document Review Checklist is included in the permanent document file.

The electronic version of the approved document(s) is submitted into the Technical Documents Library for consideration as a master document.

Draft Documents. A bound copy of the draft documents that were transmitted externally must be maintained in the project files, unless otherwise required by the client.

Externally Reviewed Draft Documents. External draft copies that have been issued to clients or agencies and have been returned with comments must be maintained in the project file, unless otherwise requested by the client. Comments arriving in the form of regular correspondence must also be maintained in the appropriate project file.

Internal Review Draft Documents. Reviewed copies of preliminary or draft documents should be discarded and not be retained as part of the project file.

Final Document. At least one bound copy, complete with all approval signatures, must be maintained in the project file. An electronic copy, and one unbound, reproducible copy should also be maintained.

Cross References:

BBL *Document Standards Guide*
BBL *Style Guide*

Supporting Document:

Document Review Checklist (QF 3.01.01)

- END OF PROCEDURE -

Chief Executive Officer
Authorization: _____

Date: _____

BBL	TOPIC:		QP 3.02
	DEVELOPMENT AND VERIFICATION OF FIGURES, TABLES, AND LOGS		
Revision B (04/01/01)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

This QP is applicable to graphic representations of information produced by BBL and affiliated companies. Figures, tables, and logs must be produced and verified according to this standard procedure.

1. Purpose

These specifications are provided to enable Project Managers and Project Staff to follow a standard procedure in the preparation and verification of figures, tables, and logs. The requirements specified for content and format enhance the consistency of work produced throughout the Firm. The review procedures provide confidence that figures, tables, and logs are accurate and meet client requirements.

2. Responsibility

1. Procedure Responsibility

The Project Manager is responsible for the administration of this procedure in the production of figures, tables, and logs.

2. Individual Responsibility

Staff assigned to procure or review figures, tables, and logs are responsible for meeting the requirements of this procedure.

3. Definitions

Figure: A graph, map, schematic, illustration, scientific, or engineering drawing that is included in a BBL work product (e.g., report, proposal, work plan, memorandum). Figures are divided into two categories, informative and design. Figures may be prepared in one of three formats: Report, Presentation, or Contract.

Informative Figure: A figure developed to convey information only and, not for design purposes, typically included in the body of a report or proposal. Informative figures are prepared in Report or Presentation format. Informative figures must be checked by the originator using the checking process outlined in Section 2 of the procedure.

Design Figure: A figure that is developed to convey design-related information, or is based on interpretation (e.g., a schematic). Design figures are prepared in Contract format. Design figures must be independently checked by a technically qualified checker using the standard BBL checking process.

Draft: A figure for which supporting review activities have not yet been completed. A Draft figure is issued for the purpose of client, agency, or other review.

Final: A figure that has been completely checked and reviewed by involved parties prior to issuance; external review comments have been resolved.

BBL	TOPIC:		DEVELOPMENT AND VERIFICATION OF	QP 3.02
			FIGURES, TABLES, AND LOGS	
Revision B (04/01/01)		SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

DESCRIPTION OF PROCEDURE:

1. Development of Figures

The Project Manager and members of the project team are responsible for following BBL specifications in the preparation of figures, tables, and logs.

Each figure must contain sufficient information to identify the document to which it is associated. Such information includes the figure title, footer, file tracer, and/or unique number assigned by Computer-Aided Drafting and Design (CADD)/word processing.

2. Checking of Figures

It is important that information be checked against the original source to reduce the possibility of transcriptional errors. The typical checking process is as follows:

- The original, which may be a hand drawing, a marked-up copy, or a cut-and-pasted copy, is submitted to CADD for completion. The originator must indicate modifications to the document of origin, and provide explicit instructions of what is needed for preparation. A unique drawing number will be assigned to the figure.
- If the figure is not an original work, references should be formally cited on the figure (e.g., Source: USGS 7.5 minute Quad, Syracuse West, 1990). At a minimum, references should be informally noted on the original submittal to CADD (e.g., location map drawn from field notes, 7/1/96).
- CADD will complete the figure from the material provided by the originator. The figure and the original are then submitted to the checker, who is to review the figure using the BBL checking process. All information on the figure (e.g., scale, North arrow location) must be verified. The first checkpoint is labeled checkpoint #1, signed and dated by the checker, and the project number is transcribed. If necessary, the figure is then submitted to CADD for further modifications.
- Once the modifications are made, CADD will provide a second revision, which is to be included with the preceding checkpoints. The standard checking process, as defined above, is to be completed by the checker. The only deviation is that the checker is obligated to verify changes identified by the previous checkpoint. Again, all corrections/modifications are identified. The checkpoint is labeled checkpoint #2 and is resubmitted to CADD. This process is repeated, with checkpoints sequentially numbered, until there are no further corrections/modifications.
- If there are no corrections/modifications to be made, the checking process has been completed., and a clean copy of the latest revision may be requested from CADD to be used in a client deliverable.
- Each checkpoint package for figures should include the original source for the figure, and a single, completely verified checkpoint (or the series of checkpoints whose cumulative sum would be the equivalent of a single, completely verified checkpoint).
- When the checking process has been completed, the final figure must be signed by the checker and Project Manager for approval for issuance. The Project Manager is not reverifying the information on the figure, but is verifying that the figure is appropriate for the application.
- Figure checkpoints are included in the project file. The figure originals are filed in the CADD department.

BBL	TOPIC: DEVELOPMENT AND VERIFICATION OF FIGURES, TABLES, AND LOGS QP 3.02
Revision B (04/01/01)	SECTION: Quality Assurance Procedure COMPANY LOCATIONS AFFECTED: All

- Figures that are generated as a result of the manipulation of electronic data (e.g., graphs, charts, etc., from spreadsheet and graphing software packages), must have the input data verified as part of the checking process.

3. Approval of Figures

Figures must be approved by the Project Manager. Design figures must be reviewed and approved by a registered Professional Engineer (PE). This approval must be indicated by the PE's seal.

4. Checking of Tables

Tables are verified in the same manner as figures. The source of information for tables should be noted on the original or first checkprint. If a table is created from compilations as well as a result of a spreadsheet, the spreadsheet must be properly documented and verified before the information may be used. Tables that present data generated from calculations should note the calculation as a source.

Transcription of field logs, such as boring logs and drilling logs, is verified in the same manner described for figures. The original field logs should be used as the source of information. Field log originals and checkprints must be included in the project file.

- END OF PROCEDURE -

**Executive
Authorization:** _____

Date: _____

BBL	TOPIC:		
	PREPARATION OF CALCULATIONS		QP 3.03
Revision B (08/12/02)	SECTION:	COMPANY LOCATIONS AFFECTED:	
	Quality Assurance Procedure	All	

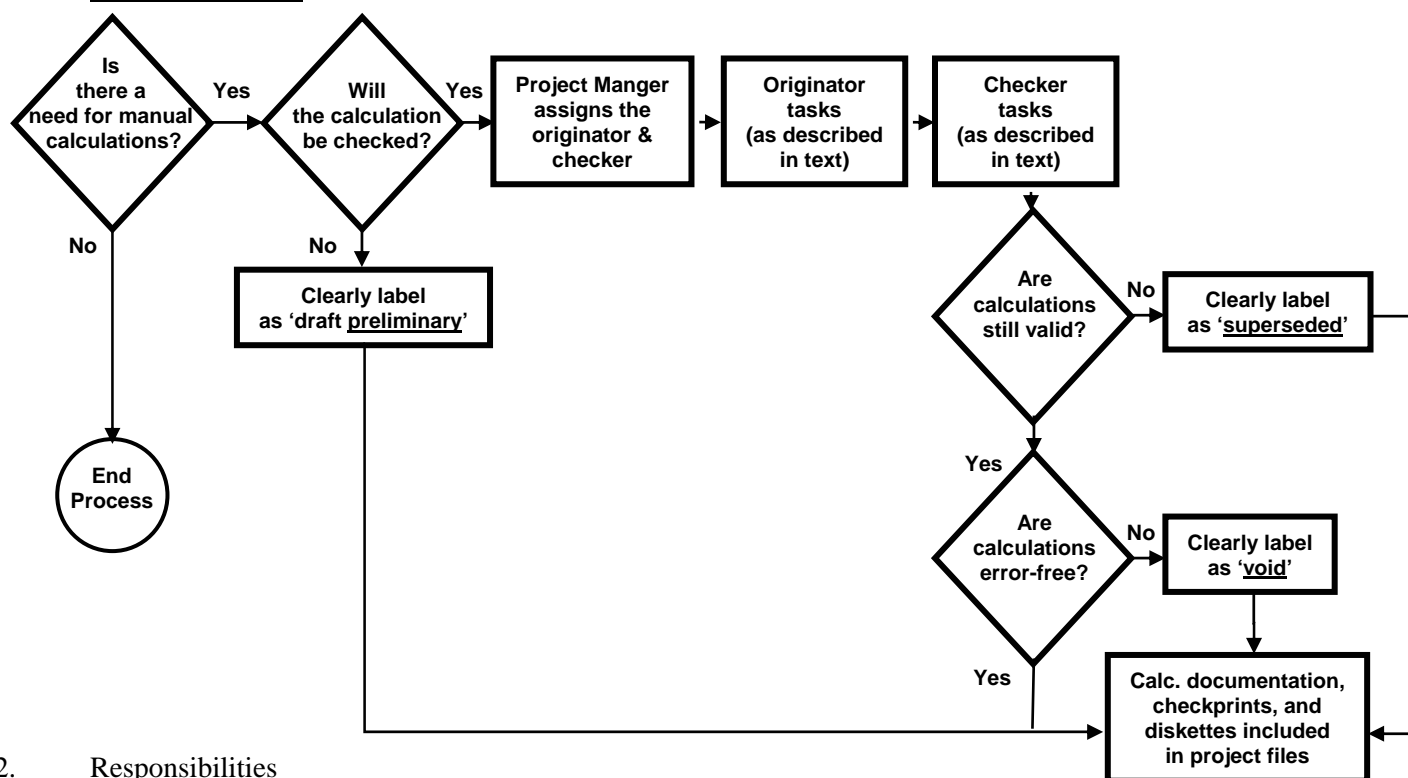
STATEMENT OF POLICY:

It is BBL's policy to perform and document all manually-performed calculations to a degree that a technical peer who may not be familiar with the project could understand the methodology, assumptions, justification, and references used. Manually-performed calculations are verified by technically qualified individuals.

1. Purpose

The objective is to provide a common process for the preparation and verification of manually-performed calculations. The goal of the calculation verification process is to have an originator and at least one checker agree that the information presented in the calculation is accurate, and concur that the process is documented in sufficient detail. Applications may include the development of sample locations, risk assessment calculations, groundwater direction and velocity calculations, modeling applications, area and volume calculations, statistical analyses, cost estimates, and design calculations.

Process Overview



2. Responsibilities

A. Procedure Responsibility

The Project Manager is responsible for assigning work to a qualified originator and checker, for the validity of calculations, and for verifying that the process has been followed.

B. Individual Responsibility

Staff assigned to produce and/or check calculations are responsible for performing to these requirements.

BBL	TOPIC:		
	PREPARATION OF CALCULATIONS		QP 3.03
Revision B (08/12/02)	SECTION:	COMPANY LOCATIONS AFFECTED:	
	Quality Assurance Procedure	All	

DESCRIPTION OF PROCEDURE:

1. General

Calculations must be checked prior to use. Calculations that are not checked or are not going to be presented in a BBL work product must be clearly labeled as "DRAFT PRELIMINARY", which is considered to be subject to verification. Calculations that have been checked but are no longer valid (e.g., change in methodology, scope of work) must be clearly labeled "SUPERSEDED." Calculations that are found to be in error must be clearly labeled "VOID." A brief explanation why the calculation has been superseded or voided should be included on the cover page.

Calculation documentation, copies of the calculation (checkprints), and/or computer diskettes must be included in the project file. Electronic documentation used for calculations shall be appropriately referenced within the project file, clearly identifying where the electronic information is located.

2. Assignment of Originator(s) and Checker(s)

The Project Manager assigns the duties of calculation preparation and checking to qualified individuals. The checker(s) is technically qualified in the subject matter of the calculations as determined by the Project Manager. Multiple checkers may be used to evaluate different aspects of a calculation, such as calculation theory and mathematical computations.

3. Calculation Process

A. Originator's Role, Step 1

The originator is responsible for developing legible calculations with conceptual, theoretical, and numerical accuracy.

- Originate calculations in an organized, legible manner, either by using standard BBL calculation paper or equivalent. Computer-generated documents include the header information that is found on the BBL gridded calculation pad.
- Include appropriate header information (i.e., subject, originator, checker, title, date, pagination, and project number) on graphs, attachments, and references. Clearly label the purpose of each component of the calculation by providing enough explanation to clearly indicate the reason for the calculation.
- If not inherently obvious, provide the methodology and cell formulae used, including modeling requirements, standard solutions, and accepted principles and techniques.
- Identify any proprietary or publicly available software packages that have been used, including the version number.
- Provide input data, references, and associated justifications, as applicable. The use of figures or illustrations to clarify information is encouraged. Equations must define variables and units, as applicable. If an equation is not common knowledge, a reference must be provided. Whenever possible, include copies of pertinent pages from reference material with the calculation.
- Photocopy the originals of the calculation and deliver the copies to the assigned checker. All supporting information should also be provided to the checker. If computer runs are a part of the calculation, it is not necessary to make a copy; checking may be completed on the original.

BBL	TOPIC: PREPARATION OF CALCULATIONS QP 3.03
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- If necessary, identify computer printouts by title, unique run number/file name, originator, and project name and number. List the title of the calculation for which each computer printout is included.
- Provide a summary or conclusion of results, as appropriate. This is particularly encouraged when the results become input to subsequent computations.
- Sign and date the calculation sheet header information and provide all necessary documentation to the designated checker.

B. Checker's Role, Step 1

The checker is ultimately responsible to the Project Manager for the validity of the calculation.

The checker is responsible for verifying all of the information in the calculation. All comments/ corrections must be documented on the checkprint.

- If appropriate, verify that all cell formulae and methodology have been documented for each spreadsheet application and database that utilizes internal functions. Check all new input data for computer runs of code that have previously been verified.
- Clearly identify (i.e., check mark in margin, initials at bottom of page, bold and strike on computer) all of the information with which you agree. Identify all corrections/comments in the margin of the document or similar appropriate location. Initial and date the review to indicate that it has, in fact, been reviewed in its entirety.
- After evaluating all of the information in the calculation, document the review by signing and dating the line marked "Checked by" and "Date" in the upper right of the BBL calculation paper or in a similar appropriate location for calculations performed by computer. Sign and date every page of the checkprint. Sign lengthy computer runs on the cover page of the run. If multiple checkers are used, each checker identifies the section reviewed. Each checker signs the applicable pages pertinent to his or her review.
- Return the checked calculation to the originator.

C. Originator's Role, Step 2

The originator and checker must concur on all information included in the calculation.

- The originator reviews the checkprints. All comments/corrections made by the checker are addressed by the originator.
- If the checker has identified errors in input data for computer runs, the run is regenerated and modified, as appropriate.
- If there are suggested corrections with which the originator does not agree, the issues are resolved with the checker. When resolution occurs, the calculation or the checkprint is appropriately modified to reflect agreement, so that there is a one-to-one relationship between the two. If the originator and checker cannot resolve their differences, the Project Manager assigns a senior technical staff member to resolve the issue.

BBL	TOPIC: PREPARATION OF CALCULATIONS QP 3.03
Revision B (08/12/02)	SECTION: Quality Assurance Procedure COMPANY LOCATIONS AFFECTED: All

- If suggested corrections exist, the originator returns the calculation originals and checkprints to the checker for review and signature.

D. Checker's Role, Step 2 (based upon additional corrections from step C.)

The checker verifies that there is a one-to-one relationship between the checkprint and the original.

- The checker reviews the calculation originals and checkprints to ensure that all of the checker's comments have been adequately addressed by the originator. If the checker is satisfied, the checker signs and dates the revised calculation in the "Checked by" block of each page. If the checker is not satisfied with the corrections, the calculation is returned to the originator and the process repeated until there is concurrence between the checker and originator.
- For computer program reruns, the corrections are re-verified, and the input to the reruns is checked. The checker signs and dates the reruns in the same manner as the originals.
- The checker returns the signed and dated checkprints to the originator. The signatures of the checker and originator indicate that the information included in the calculation has been reviewed and approved by at least two individuals who are technically qualified to evaluate the information.

- END OF PROCEDURE -

**Executive
Authorization:** _____

Date:

BBL	TOPIC: REQUIREMENTS FOR FIELD SAMPLING PLANS QP 3.04		
	Revision A 04/25/03	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is our firm's policy that the development, review, and approval of all Field Sampling Plans (FSPs) follow a common process to produce documents that are technically sound and are in compliance with all regulatory, legal, and contractual requirements. All FSPs are prepared using standard BBL format, are consistent with site-specific project planning documents, and require the approval of the Project Manager (PM) prior to implementation.

Purpose

The objective of this Quality Assurance Procedure (QP) is to provide a common process for the development, approval, and implementation of FSPs.

Responsibility

Project Officer

A BBL or BBLES officer is accountable for the implementation of this procedure.

Project Manager

The PM is responsible for implementation of this procedure, including verification that all site-specific project planning documents are followed (including approved deviation decisions, as necessary).

Project Team Members

All project participants involved in sampling activities are responsible for complying with this procedure.

Definitions

- FSP – a document that describes the procedures and protocols necessary to complete field activities.
- Work Plan – a document that describes proposed project activities.
- Quality Assurance Project Plan (QAPP) – a document that prescribes the quality assurance/quality control procedures to be followed.
- Health and Safety Plan (HASP) – a document that describes the hazards of planned activities and the controls to be implemented to protect site personnel.
- Data Quality Objective (DQO) – a statement that specifies the quality of data required to support the purposes and intent of the sampling and analysis activity. DQOs are based on the intended use of the data; as such, different data uses and needs may require different levels of data quality.
- Standard Operating Procedures (SOP) – defines a procedure and/or protocol necessary to conduct a specific field activity.

DESCRIPTION OF PROCEDURE:

1. Requirement for a FSP

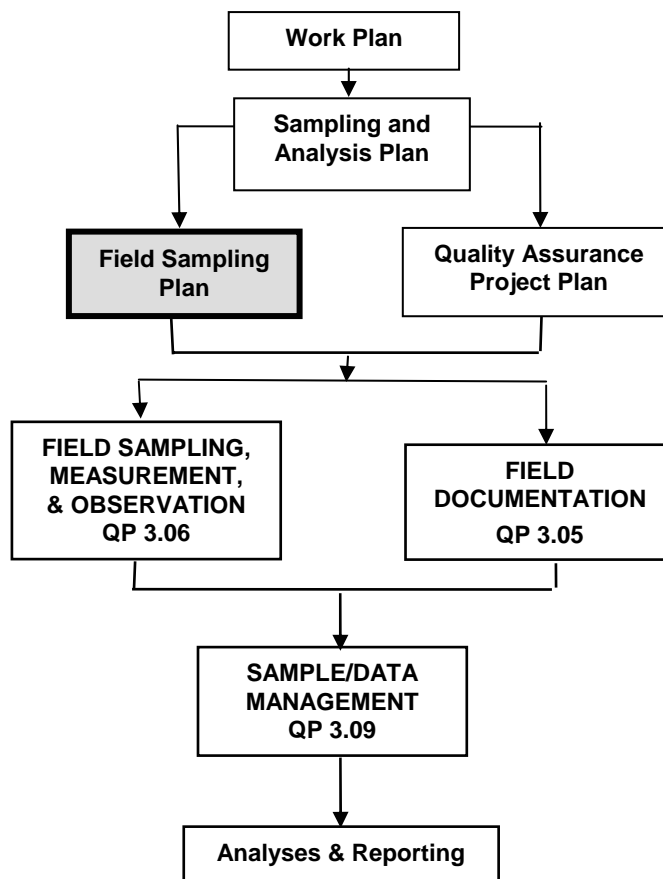
The FSP will define in detail the sampling and data-gathering methods to be used, and will be written so that field personnel unfamiliar with the site would be able to obtain samples and field information required on the project.

2. FSP Preparation

All FSPs shall follow the standard format, unless the client requires a specific format that complies with applicable regulations and is at least as comprehensive in scope as the BBL format. Any deviations to the FSP must be approved by the Project Officer.

BBL	TOPIC:		
	REQUIREMENTS FOR FIELD SAMPLING PLANS		QP 3.04
Revision A 04/25/03	SECTION:		COMPANY LOCATIONS AFFECTED:
	Quality Assurance Procedure		All

The following flow chart provides the major components of a typical field characterization program, and highlights where FSP activities fit in.



ELEMENTS OF A FIELD SAMPLING PLAN:

Site Background

If the analysis of existing data is not included in the work plan or QAPP, it must be included in the FSP. This analysis would include a description of the site and surrounding areas and a discussion of any known contaminant sources and probable transport pathways. A list of any known or suspected hazards, or potential complications with sampling procedures, should also be included (e.g., underground utility lines). The analysis should also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps. Including this discussion in the FSP will help orient the sampling team in the field.

Sampling Objectives

Specific objectives of a sampling effort that describe the intended uses of data should be clearly and succinctly stated.

Sample Location and Frequency

This section of the sampling plan identifies each sample matrix to be collected and the constituents to be analyzed. A table may be used to clearly identify the number of samples to be collected, as well as the appropriate number of replicates and blanks. A figure should be included to show the locations of existing or proposed sample points. Sampling points that are located on property for which third-party approved access is required should also be identified. Any decision to modify sampling procedures and/or locations must first be verbally approved by the PM

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	REQUIREMENTS FOR FIELD SAMPLING PLANS		QP 3.04
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and will subsequently be documented in the field logbook.

Sample Designation

A sample numbering system should be established for each project. The sample designation should include the sample or well number, the sampling round, the sample matrix (e.g., surface soil, groundwater, soil boring), and the name of the site.

Sampling Equipment and Procedures

Sampling procedures must be clearly written. Step-by-step instructions for each type of sampling are necessary to enable the field team to gather data that will meet the DQOs. A list that includes the equipment to be used, appropriate equipment calibration procedures, the material composition (e.g., Teflon, stainless steel) of the equipment, and decontamination procedures shall be provided

Sample Handling and Analysis

A table that identifies sample preservation methods, types of sampling jars, shipping requirements, and holding times shall be provided.

3. Site-Specific Standard Operating Procedures (SOP)

Certain projects or work efforts are often implemented using project- and/or site-specific SOPs that cover a number of operational issues. All available SOPs covering work-related activities noted in the FSP shall be included in the FSP.

4. FSP Review and Approval

All FSPs shall undergo the process defined in BBL's QP 3.01 – Client Document Preparation and Review, available on the corporate Intranet. All FSPs shall be reviewed and approved by PM and any others noted on the approval page placed at the beginning of the plan. As appropriate, the PM shall advise the Project Officer of the pending FSP submittal, allowing sufficient time to receive and incorporate the Project Officer's comments.

5. FSP Review and Amendment during Project Execution

All project FSPs shall be reviewed and appropriately revised whenever work conditions change or a new task is added. To verify that the FSP is consistent with site activities, it shall be reviewed periodically during the project. A formal review should take place every 6 months for ongoing projects or each time a team remobilizes to the site. Whenever the plan must be modified to fit current site conditions, these changes shall be made as an amendment to the FSP. If a change to an FSP is necessary, the PM shall approve such change, and the rationale for the change shall be documented. The original text shall not be amended unless the FSP is changed permanently.

All appropriate project personnel shall receive a briefing on the amended FSP, as well as general refresher information on the unchanged provisions of the FSP.

All FSP amendments shall be subject to the same review and approval requirements as the original FSP.

6. Filing of FSPs

All FSPs shall be retained in accordance with QP 1.02 – Document and Records Management, available on the corporate Intranet.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____

BBL	TOPIC: DOCUMENTATION OF FIELD ACTIVITIES		QP 3.05
	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All	
Revision B (11/20/01)			

STATEMENT OF POLICY:

Field activities must be documented to show compliance with projects plans, work plans, and contract terms, and to serve as evidentiary records. Documentation reflecting activities performed must be legible, organized, and complete.

1. Purpose

To provide a standard procedure for the documentation of fieldwork activities. This documentation pertains, but is not limited, to the collection of samples, subsurface information, data, and oversight of construction activities. All fieldwork documentation must include, at a minimum, project title and number, date and times of activities, the identification of the employee performing the work, and the specifics of the work being performed.

2. Responsibility

A. Procedure Responsibility

The Project Manager is responsible for the project-related administration of this QP.

B. Individual Responsibility

Staff assigned to document field activities are responsible for compliance with this procedure.

DESCRIPTION OF PROCEDURE:

1. General Requirements

A. Documentation Format

Documentation of field activities provide an accurate and comprehensive record of the work performed sufficient for a technical peer to reconstruct the day's activities and provide certification that all or necessary client, regulatory, contract, and work plan requirements were met. General requirements include:

- Use of bound field books as the primary source for information collection and recording. Field books should be dedicated to the project and appropriately labeled;
- Use of a Field Activity Log to formally document activities and events as a supplement to bound field books. The Field Activity Log can be a standard or project-specific form, or a bound field book. Preprinted standard forms are available for many activities and should be used whenever possible. These forms will provide prompts and request additional information that may be useful and/or needed that the author is not aware of at the time. Project-specific field forms may be generated, or existing forms modified to meet specific project needs. As required, client-supplied forms may be substituted;

BBL	TOPIC: DOCUMENTATION OF FIELD ACTIVITIES QP 3.05
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- Appropriate header information documented on each page, including project title, project number, date, weather conditions, changes in weather conditions, other persons in field party (if any), and author. Particular information requested is dependent upon the nature of work being performed and on the form being used. Information fields that are not applicable should be noted as such with the symbol "N/A" or other appropriate notations;
- Field documentation entries using indelible ink;
- Legible data entries: a single line should be drawn through incorrect entries and the corrected entry written next to the original strikeout. Strikeouts are to be initialed and dated by the originator;
- Applicable units of measurement with entry values; and
- Field records maintained in project files unless otherwise specified by a client or stipulated by a contract.

B. Documentation Entries

A chronology of field events, in addition to Section (1.A), are recorded. General entry requirements follow:

- Visitors to the site, including Owner and Regulatory representatives;
- Summary of pertinent project communications with the client, regulators, or other site visitors;
- Other contractors working on site;
- A description of the day's field activities, in chronological sequence using military time notation (e.g., 9:00 am: 0900, and 5:00 pm:1700);
- If applicable, calibration of measuring and test equipment, and identification of the calibration standard(s). Use of a Calibration Log, if available, with cross-reference entered into the field book;
- Field equipment identification, including type, manufacturer, model number, or other specific information;
- Temperature, wind speed, and direction readings, including time of measurement and units;
- Safety and/or monitoring equipment readings, including time of measurements and units;
- If applicable, specific forms used for collection of data are referenced in the field notebook;
- Subcontractor progress and/or problems encountered;
- Changes in the scope of work; and
- Other unusual events.

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2. Specific Requirements

A. Sample Collection

Sample collection data are documented in a bound field book and/or on a field activity log. Where both are being used, information contained in one is cross-referenced to the other. Entries include the following:

- Sample identification number, location taken, depth interval, sample media, sample preservative, collection time, and date;
- Sample collection method and protocol;
- Physical description of the sample (standard classification system for soil);
- If a composite sample, make-up, including number and location of grab-samples incorporated;
- Quality-related samples collected (duplicates, blinds, trip blanks, field blanks);
- Container description and sample volume;
- Pertinent technical data, such as pH, conductivity, temperature, and head-space reading;
- Pertinent technical comments; and
- Identification of personnel collecting the sample.

B. Sample Labeling

Sample labels must be prepared and attached to sample containers. Labels are either provided by the laboratory performing the analyses or are generated internally. The information to be provided includes:

- Sample identification number;
- Sample date and collection time;
- Physical description of the sample (e.g., water, solid, gas);
- Analytical parameters;
- Preservatives, if present;
- Sample location; and
- Client.

C. Analysis Request and Chain-of-Custody Record

A paramount component of data collection is the ability to demonstrate that the samples were obtained from the locations stated and that they reached the laboratory or archive without alteration. Evidence of collection, shipment, laboratory receipt, and laboratory custody until disposal or archive must be properly documented. Documentation will be accomplished through an Analysis Request and Chain-of-Custody Record (AR/COC) that documents each sample and identifies the individuals responsible for sample

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collection, shipment, and receipt. A sample is considered in custody if at least one of the following criteria is met:

- The sample is in a person's actual possession;
- The sample is in unobstructed view, after being in the person's actual possession;
- The sample is locked and only accessible by the custodian after having been in the person's actual possession; and
- The sample is in a secured area, restricted to authorized personnel (e.g., laboratory).

An example AR/COC form to be used by BBL personnel in collecting and shipping samples can be found in Corporate Forms. A laboratory typically will not accept samples for analysis without a correctly prepared AR/COC form. The AR/COC must be signed by each individual who has the sample in his/her custody. An AR/COC is to be prepared for each sample shipped to a laboratory for analyses. Information on this form correlates with other supporting documentation, including sample labels and sample collection logs.

The AR/COC accounts for elapsed time and for custodians of the sample from the time of its collection. The individuals who have physically handled the sample(s) or witnessed initial sample collection and packaging (sample team member) must be identified on the form. A sample team member relinquishes the sample by signing the AR/COC. Individuals who either relinquish or receive samples must include their complete names, company affiliation, and the date and time the sample(s) were relinquished. The times that the samples are relinquished and received by the next custodian should coincide, with the exception of transfer by commercial carriers. These carriers will not be required to sign the AR/COC.

If a sample is to be stored for a period of time (e.g., overnight), measures are taken to secure the sample container in a manner that only provides access to the custodian of record. If samples are relinquished to a commercial carrier (i.e., UPS, Federal Express), the carrier waybill number is recorded, and a copy of the waybill is attached to the AR/COC. These documents are maintained with other field documentation. The original AR/COC is sealed inside the shipping container with the samples.

If corrections are made to the AR/COC, the corrections should be made (single line through the error, initial, and date) by the originator of the change, and, if necessary, an explanation of the change should be provided. The documentation should be of a level of detail that clearly documents the change to a third-party reviewer.

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D. Subsurface Logs

Test pits, soil borings, monitoring wells, and piezometer installations are to be recorded in bound field books and may be supplemented with prepared forms. Personnel completing the log are to supply the following information:

- Administrative and technical information included in the header;
- Types of equipment used (e.g., drill rig type, drilling tools used, backhoe model);
- Subcontractor/driller used;
- Descriptions of subsurface materials encountered and the number and type of samples collected, if any;
- Subsurface exploration depth and units of measure;
- For drilling, length of recovery;
- Sample type and sample number for geotechnical or analytical samples collected. These data are to be entered also on the sample collection log (if used) and the sample label;
- Classification standard protocol used, if any (i.e., American Society for Testing and Materials [ASTM] Standard Penetration Test [SPT]);
- Narrative description of the soil (using standard classification system) and other pertinent information;
- Description of consistency of cohesive soils; and
- Additional data, such as background and sample vapor/gas readings, observation of sheens, NAPL, depth to water (if encountered), odors, changes in drilling conditions, etc.

E. Monitoring Well/Piezometer Installation

In addition to requirements in Section D, subsequent entries may involve transcription of field data from the field book onto a computer-based boring log. The field notebook is to be used to identify the chronology and major events of the installation activity, and the computer-based boring log is to be used to correlate the geologic strata to the major elements of the monitoring well construction. Information to be collected and recorded include:

- Location identity;
- Screen type, length, and location;
- Diameter;
- Total length;
- Sump location and depth;
- Materials of construction;
- Riser length;
- Seal type and location;

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- Sand type; and
- Depth to water before and after installation.

F. Construction Activities

Construction activities provided for construction observation or construction management services, are documented by:

- Bound field books entries dedicated to the project and on appropriate company forms (BBL or BBLES);
- Owner or client name;
- Contractor or subcontractors performing the work;
- Contractor or subcontractor superintendent(s) on site;
- Chronological sequence and description of work activities performed, including workday start and completion times;
- Reference to contract or specification sections relating to work being performed;
- Listing of all trades performing work by contractor and subcontractor;
- Number of persons per trade;
- Hours worked per trade;
- Work hours per day per shift, if applicable;
- Equipment on site by manufacturer, model number, size and type;
- Listing of equipment on site, being used or left idle, including hours of use;
- Description and quantity of materials used or incorporated, with reference to contract or specification item number; and
- Calculations with dimensions for quantities of material used or incorporated.

G. Daily Safety Meeting

A Daily Safety Meeting is to be conducted and documented each workday prior to the initiation of field activities, with on-site BBL personnel, contractors, subcontractors, and visitors. Safety topics discussed are entered on the Daily Safety Meeting Form (see Health & Safety Forms). Topics discussed include site-specific conditions, procedures to be followed that day, and protective equipment. A printed listing of the attendees at the meeting, and their signatures are included. Other required data are:

- Identification of the individual conducting the meeting and his/her signature; and
- Identification of the project supervisor and project manager.

BBL	TOPIC:		DOCUMENTATION OF FIELD ACTIVITIES	QP 3.05
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H. Calibration

Measuring and test equipment calibration data are recorded in the field book or on the Field Activity Log. Calibration data include the following:

- Unique identification of instrument being calibrated, including type, model, and serial number;
- Date and time of calibration;
- Standards used in the calibration, including standard identity, concentration, lot number, and manufacturer of the standard;
- Instrument reading with respect to each calibration standard; and
- Comments, as necessary, regarding instrument performance.

I. Photographs and Videos

After development, photographs and videos may be used to help document pre-, active, and post-field activities. In sensitive areas (e.g., secured, confidential), the client must be contacted to evaluate security procedures concerning use of photographs or videos. Photographic and video documentation must include project title, project number, date, and description of conditions. The time should also be documented if time is important to a sequence of photographs.

Photographs are documented by numbering digital photographs and identifying the number and subject on the Field Activity Log. Individual prints may be marked with a stamp or preprinted self-adhesive labels, or by writing the project number and sequential number of each photograph and referencing the numbers in the field book, the Field Activity Log, or a dedicated photo log. Videos used for field documentation are to be identified by project title, project number, and description.

J. Subcontractor Preparedness Checklist

Prior to starting work, a review is to be made and documented of a subcontractor's preparedness to perform specified activities. This review may be documented on the Field Activities Log or on checklists that may be developed according to requirements for subcontracted work activities.

- END OF PROCEDURE -

Executive

Authorization: _____

Date: _____

BBL	TOPIC:		FIELD SAMPLING, MEASUREMENT, AND OBSERVATION	QP 3.06
	Revision A 02/18/03	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy that field sampling, measurements, and observations must be conducted and documented to provide an evidentiary record and to demonstrate that such activities have been performed consistently and in accordance with approved site-specific project planning documents. Field sampling activities and documentation may include, but are not limited to work plans, the Quality Assurance Project Plan (QAPP), the Field Sampling Plan (FSP), applicable standard operating procedures (SOPs), the Health and Safety Plan (HASP), and/or other appropriate project documents associated with the sampling program.

Purpose

The objective of this Quality Assurance Procedure (QP) is to provide a common process for the execution of activities associated with field sampling, measurements, and observations. This QP, while focused on field sampling activities, should be performed in conjunction with QP 3.05 – Documentation of Field Activities.

Responsibility

Project Manager

The Project Manager is responsible for implementation of this QP, including verification that all site-specific project planning documents are followed (including approved deviation decisions, if necessary). Although a Field Supervisor may be leading the sampling activities, the PM is ultimately responsible for staff's adherence to this QP.

Project Team Members

All project participants involved in sampling activities are responsible for compliance with this procedure. All individuals and organizations involved in the sampling program will read and adhere to the site-specific project planning documents that direct their field activities.

Definitions

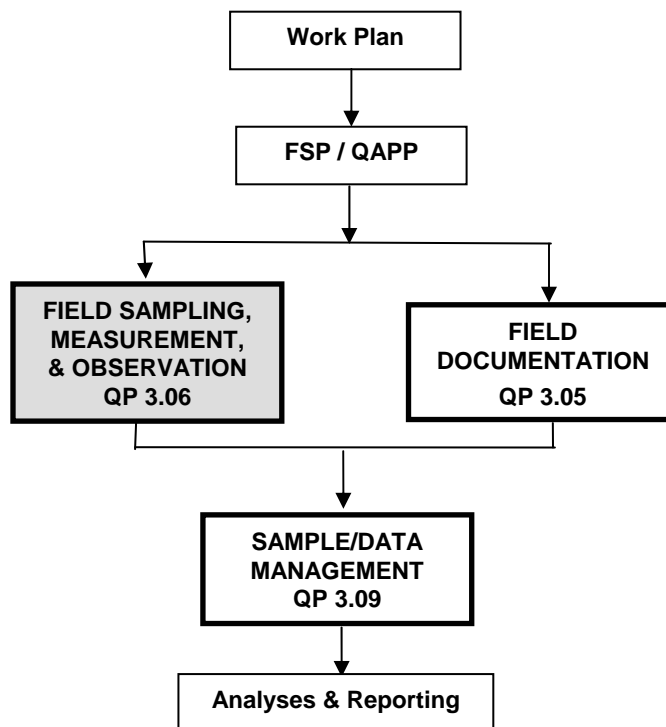
- Work Plan – a document that describes proposed project activities.
- Quality Assurance Project Plan (QAPP) – a document that prescribes the quality assurance/quality control procedures to be followed.
- Field Sampling Plan (FSP) – a document that describes the procedures and protocols necessary to complete field activities.
- Health and Safety Plan (HASP) – a document that describes the hazards of planned activities and the controls to be implemented to protect site personnel.
- Data Quality Objective (DQO) – a statement that specifies the quality of data required to support the purposes and intent of the sampling and analysis activity. DQOs are based on the intended use of the data; as such, different data uses and needs may require different levels of data quality.
- Standard Operating Procedures (SOP) – defines a procedure and/or protocol necessary to conduct a specific field activity.

DESCRIPTION OF PROCEDURE:

Sampling and data quality are directly related to overall project success, which means that sampling and other observation activities are a critical and fundamental component of any project. Errors, mistakes, missed communications, or out-of-scope or out-of-compliance actions may have an adverse effect on a project. Because field conditions cannot be anticipated absolutely, procedures for a particular sampling program must include a formal process for making decisions and obtaining appropriate approvals for deviations necessitated by conditions. Within this context, the basic procedures and requirements for sampling and other field measurements and observations are outlined in the procedure.

BBL	TOPIC: FIELD SAMPLING, MEASUREMENT, AND OBSERVATION QP 3.06
	SECTION: Quality Assurance Procedure COMPANY LOCATIONS AFFECTED: All
Revision A 02/18/03	

The following flow chart provides the major components of a typical field characterization program, and highlights where field sampling activities fit in.



Field Sampling, Measurement, and Observation Activities

Field operations are conducted to provide reliable information, data, and/or samples that meet the project and data quality objectives. It is essential that all field sampling, measurement, and observation activities begin with detailed familiarity of all appropriate site-specific project planning documents, most notably the FSP. Armed with a good understanding of what samples or data are to be collected, as well as where and why they are to be collected, field personnel will perform the following activities during the implementation of field characterization activities.

Briefing and preparation – Before any field activity begins, the Project Manager and appropriate field personnel (e.g., field supervisor, crew leader, or entire crew) should engage in a briefing via telephone discussion or in person to review (in summary fashion) the following:

- project objectives and project plans
- DQOs
- sampling locations
- SOPs
- chain-of-command
- the HASP
- provisions for addressing deviations
- any other special circumstances or information critical to the success of the sampling event and integrity of the data and documentation

When possible, the Project Manager and/or Field Supervisor should undertake a reconnaissance site visit prior to initiation of the sampling or other field activity to review sample locations (at least generally) and consider health and safety or other logistical challenges the site may present. Finally, the Project Manager and/or field supervisor must verify that all necessary subcontracts, notifications, and approvals are in place, including coordination with client personnel, agency oversight personnel, access to private or public property (i.e., legal), and coordination with utility companies/agencies regarding the potential of buried, overhead, or other sensitive infrastructure that may impinge on project implementation and/or health and safety.

BBL	TOPIC:		
	FIELD SAMPLING, MEASUREMENT, AND OBSERVATION		QP 3.06
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Operating procedures – For routinely performed activities, SOPs must be followed to assure consistency and quality in method and resulting data. Any deviation from established procedure(s) during a data collection activity must be documented. In cases where the integrity of the data being collected may be jeopardized, field personnel must consider stopping associated work activities until the Project Manager or other project authority can be consulted as to what corrective action is warranted before work can recommence.

Equipment and instrumentation – The site-specific project planning documents will be reviewed to determine the equipment, instrumentation, and supplies needed for the sampling, measurement, observation, or other data collection activities. All equipment and instrumentation will meet the requirements of the specifications, methods, and procedures provided in the FSP, QAPP, HASP, or other planning document(s). Further, the field supervisor/crew is responsible for verifying that the equipment and instrumentation are in good working order and, if necessary, properly calibrated and maintained before, during, and after use in the field. (See BBL QP 2.04 – Calibration and Control of Measuring and Test Equipment – available on the corporate Intranet.)

Physical sample management – It is extremely important that proper procedures be followed in the numbering and labeling system employed, the chain-of-custody procedures, and the manner in which the samples are tracked from collection point, through handling and shipment, and to receipt by the laboratory (including sampling techniques and tools, sample volumes, holding times, preservation methods, packaging, and shipping procedures). Field personnel are responsible for obtaining the proper number and type of quality control samples, including but not necessarily limited to blanks, duplicates, matrix spikes, and equipment rinsate samples (these requirements should be specified in the site-specific project planning documents and reviewed prior to commencing the field program). All of these procedures are specified in the FSP, QAPP, HASP, or other project planning documents and shall be reviewed by field personnel prior to initiation of field activities. Any deviation from established procedures could impact the integrity of the sample or activity; and must be justified, approved by the Project Manager, and be appropriately documented.

Qualitative data management – Based on methods and requirements specified in site-specific project planning documents, all data collection efforts adhere to SOPs and are carried out in a consistent manner that is well documented. This includes care in making and recording accurate and precise measurements and observations in a timely manner.

Decontamination – Field personnel will review and be familiar with all required procedures, including those for cleaning materials used, for protecting or covering cleaned equipment, and for properly disposing of cleaning materials. If decontamination is conducted on site, the activities will be performed in a designated, controlled location that will not affect collected samples. Decontamination activities will be appropriately documented in the field notes, following the protocols specified in the FSP/QAPP and BBL QP 3.05 (available on the corporate Intranet). Wastes generated in the field will also be collected, stored, and properly disposed in accordance with FSP/QAPP protocols.

Corrective action – The Project Manager and field personnel will be familiar with any site-specific project planning procedures designed to address deficiencies or deviations quickly and efficiently, so as not to unnecessarily hold up progress or compromise the integrity of the field effort. Based on the procedures established in the site-specific project planning documents, specific steps are taken as soon as a potential problem is identified. At a minimum, deficiencies or deviations must be reported to the Project Manager (through pre-established chain-of-command) and then fully documented to include the nature of the problem, the corrective action taken, and the person(s) responsible for correcting or otherwise addressing the problem. Some site-specific project planning documents may contain site-specific corrective action procedures.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____

BBL	TOPIC: CONSTRUCTION INSPECTION AND OBSERVATION SERVICES QP 3.07		
	Revision A (08/06/03)	SECTION: Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy to perform construction inspection and observation services, focusing on client needs, while maintaining appropriate risk management on behalf of BBL.

Purpose

This quality procedure (QP) provides a common process for construction inspection and observation services, and includes a background, basic understanding, and tools to be used during these service activities. The difference between inspection and observation is subtle, but worth noting. Inspection may be viewed as an official and critical examination, especially for flaws, while observation is a process of noting and recording. We need to be cognizant of the contractual reference under which our service is being performed, but for this procedure, we will consider the two terms synonymous. Construction inspection and observation are required to verify that the construction activities have been completed in substantial compliance with approved Contract/Bid Documents.

The following information provides a general overview of construction-related activities. This procedure applies only to those contractual situations where inspection or observation is to be provided. It is important to note that service requiring construction management is not guided by this procedure and is performed only by BBLES.

BBL	Administration	Inspection or Observation	Partial Technical Oversight and Reporting
BBLES	Construction Management and Supervision		

Responsibilities

Project Manager (PM) – The PM is responsible for the administration of this procedure and reports to the Principal-in-Charge (PIC), who has overall accountability to the client for the project. The PM, at a minimum, is responsible for directing the project work activities and project invoicing, obtaining authorization from the client for scope changes, collections, managing the client relationship during the project, interacting with regulatory agencies, complying with health and safety plans and regulations, and providing quality assurance. The PM is responsible for confirming that all contractors and/or subcontractors have presented and adopted a health and safety plan for their staff that meets accepted standards.

Engineer in Charge (EIC) – The EIC is a licensed professional engineer in the state where the project is located. The EIC, who may or may not be a BBL employee, is responsible for the overall design of the project and normally assists with design issues that may arise during construction. If the EIC is a BBL employee, then the EIC works in conjunction with the PM and performs design/construction activities in accordance with QP 3.10 – Design/Build Services, available on the corporate Intranet. In some instances, construction projects may be designed by another engineering firm. In this situation, the client typically authorizes BBL to communicate with the other engineering firm if design issues arise while implementing construction activities. While implementing construction activities, the EIC is responsible for matters concerning design questions, resolving design issues, and modifying the design if necessary.

Health and Safety Officer (HSO) – The HSO has overall responsibility for the health and safety of BBL employees during implementation of construction activities. Any health and safety questions, concerns, or issues that arise during construction activities are discussed with the PM and the HSO.

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Construction Resident/Resident Engineer – On certain projects, a construction resident may be assigned. When a construction resident is a licensed engineer in the state where the services are being provided, he/she is referred to as a resident engineer. Typically, the construction resident/resident engineer is a supervisor for the construction inspector(s)/ observer(s), and communicates directly with the contractor, client, and regulatory agencies, as required. On projects where a construction resident/resident engineer is not assigned, the construction inspector(s)/observer(s) assumes overall responsibility for the implementation of construction inspection or construction observation services at the site and reports to the PM.

Construction Administrator – On certain projects, a construction administrator may be assigned. The construction administrator may or may not be a licensed engineer. The responsibilities of a construction administrator include administering the contractor on behalf of the client. At a minimum, this includes reviewing, approving, and monitoring the contractor's construction costs, payment applications, modifications, change orders, construction claims, substantial completion, and final acceptance and payment. In some instances, the construction administrator also takes on the responsibilities of the construction resident/resident engineer if a construction resident/resident engineer is not assigned to a project.

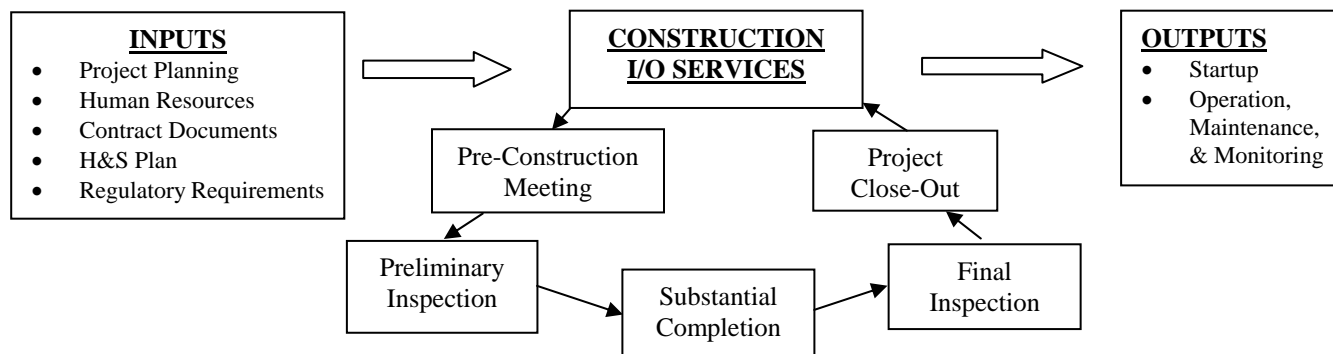
Construction Inspector/Observer (I/O) – The construction I/O is responsible for inspecting, observing, and documenting construction activities. The construction I/O typically reports to the PM or construction resident and serves as the eyes and ears of the client. In some instances, the construction I/O is also the PM. The construction I/O interfaces with the contractor's designated field representative, client, EIC, and/or regulatory agencies during construction activities but does not provide contractor direction. The construction I/O appropriately informs the construction resident, PM, client, and contractor(s) regarding contract compliance issues.

Client – The client has overall responsibility for the project and is also considered the owner of the project. The client may be a private firm or entity, municipality, or regulatory agency. The client has the lead for the overall project and all final decisions to be made for the project will ultimately be made by the client. During the project, at a minimum, the PM works closely with the construction resident/resident engineer and/or the construction I/O providing additional support as requested by the client.

Contractor – The contractor is the primary firm or entity retained by the client to implement project work activities at the site. Typically, the contractor interfaces with the PM, construction resident/resident engineer, construction administrator, construction I/O, HSO, and the client.

DESCRIPTION OF PROCEDURE:

This section summarizes project information that must be reviewed and understood prior to construction implementation, procedures that are implemented while performing construction activities, and project close-out procedures that are implemented after completing construction activities. Construction inspection and observation services are part of a process that is depicted as follows:



BBL	TOPIC: CONSTRUCTION INSPECTION AND OBSERVATION SERVICES QP 3.07		
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1.0 Project Information

For any given project, detailed information is prepared to define the work activities for the project. This information may be in various formats and documents, and is reviewed and understood by the construction I/O prior to and during implementation of construction activities. A list and description of the typical project information that is generated during a given project is provided below.

Project Scope of Work and Cost Estimate – This is typically a letter or formal proposal document that is prepared by the PM and/or PIC for the client’s review and approval. The Project Scope of Work and Cost Estimate identify the various tasks that BBL will perform, as well as a detailed breakdown of the costs associated with each task. Based on the information included in this document, the construction I/O is aware of the time budgeted for each task, and is responsible to track these hours appropriately to provide advance notification to the PM of potential/actual compliance with, or exceedences to, the budgeted hours.

Project Plan – A Project Plan is prepared by the PM for all projects and typically includes the following information: project title, location, file number, purpose and scope, client information, project team, scope of work, deliverables and schedule, budget, potential problems, special conditions, available background information, attachments, and distribution list. The construction I/O must be familiar with the Project Plan, and is responsible for understanding and implementing the plan appropriately.

Contract Documents/Bid Documents – Contract Documents/Bid Documents define and stipulate the requirements for implementing a given construction project. Typically, the contractor awarded the work performs construction activities in accordance with the standards established in the Contract Documents/Bid Documents. Therefore, it is critical that the construction I/O reviews and thoroughly understands the Contract Documents/Bid Documents, which typically include drawings and address the following items and sections:

- Information to bidders, bid forms and basis for award of construction contract.
- Specifications or Material and Performance. Specifications or Material and Performance section(s) define the qualitative requirements for products, materials, and workmanship upon which the construction contract is based. Typically, specifications may be prepared in accordance with Construction Specifications Institute (CSI) or client guidelines, which may include a separate written specification section and/or information provided on Contract Drawings. Material and Performance sections are task-specific procedures/requirements that are prepared by BBL for the project and include Description, Products, and Execution sections.
- Agreements. The Agreements section is usually the component of the Contract Documents that pertains to legal rights and binding responsibilities of the parties to the work between the client and contractor(s).
- Special and General Conditions. Special and general conditions are determined by the EIC and client, and are included in the Contract Documents/Bid Documents. This section typically provides global and specific information for various components associated with the project.
- Modifications and Change Orders. These are often a main contributor to project delays and cost overruns by the contractor. Steps are taken to minimize their impact on the overall project by closely monitoring the contractor and taking a proactive approach to immediately address and resolve issues that may potentially or do arise during the project. It is necessary to recognize the need to expedite contract changes, from identification to finalization, that may otherwise delay construction progress and affect construction of the project. Working with the EIC, construction resident/resident engineer, construction administrator, contractor, and client to identify and prioritize change orders keeps the project on track, budget, and schedule.

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- **Payment.** The Contract specifies payment terms for the contractor. When Contract terms require the submittal of a detailed cost breakdown of the work for approval, payments are made based on the approved cost breakdown. The contractor is required to submit a payment requisition for the amount and value of the work completed, including materials and equipment provided during a requisition period, typically monthly. The construction I/O may be required to review the contractor payment requisition to confirm its authenticity.
- **Contract Drawings.** These comprise all official plans or reproductions of drawings pertaining to the work or to any facility connected therewith. The Contract Drawings are part of the Contract Documents and show the proposed work to be implemented by the contractor.
- **Addendum (Addenda).** An addendum is issued during the bidding process and provides modifications and/or clarifications to the Contract Documents/Bid Documents. It is important that the construction I/O is aware of and understands all addenda that are issued for a given project and their effect on the project and schedule.

2.0 Implementation

Preconstruction Meeting – Following the award of a construction project contract and prior to commencing construction activities, a preconstruction meeting is conducted. The preconstruction meeting is held in the offices of the client or the EIC, and is attended by representatives of the client, the EIC, the construction I/O, the contractor(s), and other interested parties. Based on contract requirements or other directives, and if not already submitted for review, the contractor(s) provides a construction project schedule listing a breakdown of milestone activities, copies of all applicable permits or a list and status of required permits, and an itemized cost breakdown of their bid. Project requirements, procedures, and lines of communication are also addressed at this meeting. A preconstruction meeting topics list/outline is available on the corporate Intranet.

Documentation - Quality Assurance Procedure QP 3.05- Documentation of Field Activities provides guidance for documenting construction I/O activities. This procedure is found on the corporate Intranet, and addresses reasons and needs for proper documentation, as well as the appropriate tools, formats, and entries to be used. A Construction Activities Report (also available on the corporate Intranet) is used to document the activities performed, and includes project identification information, project status, summary of site inspections, and summary of findings. The construction I/O keeps written notes of items discussed and verbal approvals in the project files. Verbal discussions and approvals are documented in the Construction Activities Report. Written documentation is essential for establishing an historical record for reference at a later date. The methodical entry of detailed information and activities in field books and prepared forms demonstrates compliance with project plans, work plans, contract terms and conditions, and/or Contract Document/Bid Documents. In some instances, these reports may be used as evidentiary records for disputed contract work.

Photographs – Prior to, during, and after construction implementation, project photographs (photos) are an integral and important part of project documentation. Regardless of the equipment or format used (e.g., disposable camera, 35-mm camera, digital camera, video camera), a photo log is maintained to describe the project, date, location, orientation, and description of the subject matter of each photo. When a video camera is used, recorded voice and available data entries are included. When a photo log is used, photo numbering is maintained to cross-reference the entered log data. This information is also logged on the back of the individual photo. BBL has self-adhesive labels for this purpose. Photos are stored/filed together in chronological order. Photos are taken of milestone events and on a periodic schedule, to confirm contract and client requirements. Milestones include preconstruction conditions, significant events, and post-construction conditions. Periodic events can be monthly, weekly, daily, or hourly, depending on progress and need. Photos are another excellent evidentiary record for disputed contract work.

Certification – When required, a Professional Engineer (P.E.) will certify that the construction project was completed in substantial conformance with the Contract Documents/Bid Documents. This certification is based on full-time,

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onsite observation of actual construction activities. The construction observation is performed by a P.E. licensed to practice in the state of the project location, or by a designated technical representative under the P.E.'s direction. The P.E.'s certification of construction compliance with approved Contract Documents/Bid Documents verifies that the construction project was performed as intended. Where a situation arises for partial certification, certification will only be provided for those activities actually observed and completed.

Sampling – Sampling methods and frequencies are stipulated in the Contract Documents/Bid Documents and generally include construction material and/or environmental sampling. Examples of test method procedures for construction materials include the American Society of Testing Materials (ASTM), the American Concrete Institute (ACI), and the American Institute of Steel Construction (AISC). BBL or the client may subcontract with an independent material testing company for the collection and testing of construction material samples; in this case, the construction I/O is responsible for scheduling, coordinating, and documenting this activity. Typically, environmental samples are collected onsite and submitted to an offsite laboratory for analysis. In those cases where BBL employees are collecting samples (e.g., soil, air, wipe, sediment, or water samples), only trained and experienced personnel are allowed to collect samples in accordance with stipulated sampling procedures and requirements. Refer to QP 2.04 - Calibration and Control of Measuring and Test Equipment, and QP 3.06 - Sampling Activities (available on the corporate Intranet), for further guidance. If you are uncertain of a testing protocol, seek help or guidance from the PM. BBL or the client may subcontract with an independent company for the collection of environmental samples. In these cases, the construction I/O is responsible for scheduling, coordinating, and documenting the sampling activity. In most cases, the construction I/O is responsible for coordinating and scheduling the delivery of environmental samples from, and to, the offsite laboratory.

Manifests – A manifest is a legal, itemized, evidentiary document that lists pertinent information on transport content and accompanies the transporter during shipment of the content from one location to another. In most cases, the content is hazardous or nonhazardous waste that is being transported from a generator (owner/client) site to an offsite disposal facility. The state in which the material is disposed of, and in some cases the disposal facility itself, will predicate manifest content and format. Each manifest form has a unique code that applies only to a specific load of material. Each manifest is filled out prior to shipment, and, at a minimum, includes:

- date, time, location;
- description of material and/or Department of Transportation (DOT) material code, and estimated weight or volume;
- name and signature of the owner or the owner's authorized representative; and
- hauling company's license number, name, and representative's signature.

Upon completing transport, the offsite disposal facility fills in the remaining and appropriate information on the manifest, including, at a minimum, the date and time received and the facility's confirmation of weight or volume of the transported contents. Authorized agents for both the transporter and the offsite disposal facility sign and complete the execution of the manifest. Each respective party involved in this transaction (i.e., generator or authorized representative, transporter, and offsite disposal facility) submits appropriate manifest copies to designated authorities within specified time frames. BBL representatives can sign manifests on behalf of an owner/client/generator only if authorized to do so in writing acknowledging that BBL is acting as its "Agent." The construction I/O obtains a copy of the written authorization from the PM and uses the established authorization language and terms.

Table Preparation and Entries – Tables are a convenient and effective means for tracking and summarizing data that is generated during construction implementation. Tables are prepared and used by construction I/Os at the onset of a project. To establish table needs, the construction I/O reviews the Contract Documents/Bid Documents and prepares an outline of the data to be tracked during the construction, project close-out, and preparation of a completion report. After establishing the data needs, the construction I/O reviews this outline with the PM to verify the tables that will be generated. BBL uses Microsoft Excel for table preparation and requires an established format (see QP 3.02, available

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on the corporate Intranet). AA/ESs provide assistance in preparing the tables. Examples of tables used on construction projects include material quantities by type, date, location (station), and volume; cost for unit price and percent of lump-sum items completed; pre- and post-sampling analytical results; geotechnical laboratory analyses and field testing results; manifests for quantity of materials transported offsite for disposal; and water treatment quantities.

Project Schedule – The project schedule is an important tool for planning, coordinating, and sequencing work; ordering equipment and materials; and forecasting manpower needs and cash flow throughout a construction project. Updating and distributing construction schedules periodically provides a performance measurement and allows all involved parties the opportunity to maintain or adjust their particular operation(s), as needed, to remain on schedule, and to meet their own goals and those of others. The most common schedule update period is monthly and usually coincides with project payment requisition periods. Computer software, including Microsoft Project and Primavera, are available and commonly used for schedule preparation. Schedule formats include bar charts, Gantt charts, and the critical path method (CPM).

Project Files– BBL’s standard filing format is outlined in QP 1.02 (found on the corporate Intranet.) Files for construction projects may require additional categories depending upon the requirements of the project.

Meeting Minutes – Preconstruction and construction progress meetings provide an opportunity for all parties involved in a project to ask and answer questions, discuss and update schedules, address contract/project clarifications and issues, review payment status, and raise other pertinent issues. Meeting minutes provide an essential record of these meetings and accurately document the particulars of meeting discussions. BBL’s Progress & Coordination (P&C) Meeting Minutes, presented in a memo format, lists attendees and their affiliations and addresses, schedule, and old and new business issues. A disclaimer advises participants to respond to the author in writing within a specified time period if they object to P&C Meeting Minutes content. The meeting minutes are distributed to all participants and to anyone listed to receive a copy.

Preliminary Inspection – Preliminary inspection of the contract work is required prior to acceptance of the work by the client. During this inspection, the work is checked for compliance with the Contract Documents/Bid Documents. All facilities must be in full compliance with the approved construction drawings, supporting documents, and client-approved revisions prior to client acceptance.

Beneficial Occupancy/Substantial Completion – Beneficial occupancy may be necessary/desired when use or occupancy of the work (or designated parts thereof) by the client, occurs even though all of the contract work (or designated parts thereof), may not be substantially complete. Substantial completion is that stage of progress when the contractor completes all of the work of the Contract except for minor incidental items, the existence of which will not effect or impede the client’s full use of the work, as determined by the client. Few items in a project schedule are as important as the dates of beneficial occupancy and/or substantial completion. Liquidated damages, reduction in retainage, warranties, and other factors are often connected to these dates. The EIC is normally assigned the duty of certifying the dates of beneficial occupancy and/or substantial completion. Experience shows that these dates are not always reflected in the certificate prepared by the EIC. Conversely, the date given in the certificate may predate the actual date when the requirements were met. As a result, disputes may arise. Early tracking of closeout issues results in on-time project closeout. Tracking logs are designed to highlight key issues, and to bring them to a timely resolution.

3.0 Project Closeout

Final Inspection – Final inspection is required when the project is at completion. The EIC uses professional judgment as to the scope of this inspection, and requests the client’s participation to confirm or deny acceptance. A report is prepared that includes project identification, status, scope of inspection, and summary of the findings. Any remaining work to be completed and deficiencies that require correction before final acceptance are listed in this

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report, including any necessary follow-up actions.

Final Record Documents – An important aspect of project closeout is completing all Final Record Documents. These records include a final copy of working drawings, as-built drawings, operation and maintenance manuals, correspondence, certifications, permits, and other client requirements. Preparation of the Final Record Documents commences before completing a project, thus allowing for timely preparation of a completion report (see QP 3.01 – Document Preparation and Review, which is available on the corporate Intranet). The construction I/O meets with the PM to review the content of the Final Record Documents and to establish an outline.

Final Testing/Certification – Final testing required by the Contract is tracked to confirm conformance and to determine its bearing on the schedule. Proposed field test procedures are reviewed. Results of testing are reviewed to determine acceptability. Final completion certificates and reports are prepared upon completion of the work, including all testing. After all project requirements are fulfilled, the project certification, project final cost estimate, and explanation of quantity overruns and under-runs are completed prior to final acceptance. Any unresolved issues (from the final inspection, the completion of punch list items, and a determination of final contract working time) are resolved before final acceptance of the project. The final acceptance report is completed when all project requirements are met.

Final Acceptance – Final acceptance is determined by the client once all of the project requirements are fulfilled, which includes the completion of all construction activities by the contractor, resolution of all contractor change orders/claim costs, project certification, project final cost estimate, and explanation of quantity overruns and underruns.

One-Year Inspection – If required in our agreement with the client, this inspection is conducted just prior to one year after acceptance of the work by the client. During this inspection, the facilities are examined for any defect in materials and workmanship and for physical and operational compliance with approved construction drawings, supporting documents, and client-approved revisions. Final payment (normally 2% to 5% retainage of work completed or a retainage bond) is normally released after the one-year warranty period.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	TOPIC: DEVELOPMENT OF DESIGN DOCUMENTS QP 3.08
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STATEMENT OF POLICY:

It is our Firm's policy that all engineering design documents (design reports and letters, work plans, contract drawings, technical specifications, performance specifications, and pre-purchase specifications) produced by BBL and its affiliated companies be developed under the guidance of and be signed by the designated Engineer in Charge (EIC) for that discipline. BBL design projects are performed using appropriately skilled personnel in a "best team" approach and must be technically sound (as defined by the industry standard of care¹) and developed using the appropriate engineering standards and codes, meet the client's goals and objectives, and comply with all applicable local, regional, state, and federal requirements.

1.0 Purpose

The purpose of this quality procedure (QP) is to define a common process for the development of design documents prepared by BBL and our subconsultants for all of our clients.

2.0 Responsibilities

The Principal in Charge (PIC), in association with the Resource Manager/Coordinator of his or her group, is responsible for the identification and selection of the Project Manager for any given design-related project. If the PIC is not the EIC, the PIC shall designate the EIC for the project. The PIC and Project Manager (PM) will be responsible for determining that sufficient budget for full implementation of the EIC function has been provided. The PIC and the PM will also be responsible for assembling the appropriate design team for each design-related project. The PIC, PM, and EIC will work in concert to minimize the potential for liability, conflicts, or a misunderstanding of client expectations associated with the design activities.

The Engineer in Charge (EIC) is a Professional Engineer (PE), registered in the state of the project and authorized under that state's licensing laws to oversee design-related activities. The EIC:

- is the individual authorized by BBL to sign and seal design documents on behalf of the Firm;
- is an Officer of the Firm, or an individual authorized by the President of the Firm, to perform EIC responsibilities;
- has *responsible charge*. *Responsible charge* is usually defined as "having direct supervision and/or control of the professional services being provided";
- is involved in the overall design effort, including conceptual, preliminary, and final design;
- reviews the design team's qualifications and approves the selection of the design team members; and
- verifies that all design elements are undertaken by appropriate design team members so as to achieve a project design that meets acceptable engineering standards and codes and industry standard of care and is produced in accordance with the applicable state licensing requirements.

The Project Manager, in association with the EIC, is responsible for the management of the day-to-day engineering work of the design team. It is preferable that the PM on a design-related project has client-specific design experience, and, if possible, is a Professional Engineer. Both the EIC and the PM must be thoroughly familiar with the client's overall objectives, Quality Procedures, and goals prior to the start of the project.

Project Personnel assigned to the design effort must be familiar with the overall project scope of work and the task budget assigned to them. They are responsible for achieving the individual design tasks assigned to them

¹ Industry Standard of Care - services provided by a design professional will be performed in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

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and must be capable of completing these tasks. Individual design tasks should be managed by senior engineering personnel with specific project task assignments (i.e., the task managers make the personnel project task assignments) from either the PIC/EIC/PM or other discipline-specific (e.g., groundwater treatment, geotechnical) senior engineering personnel. Task managers are to be selected by the PIC/EIC/PM at the beginning of the project and are designated in the project plan.

3.0 Description of Procedure

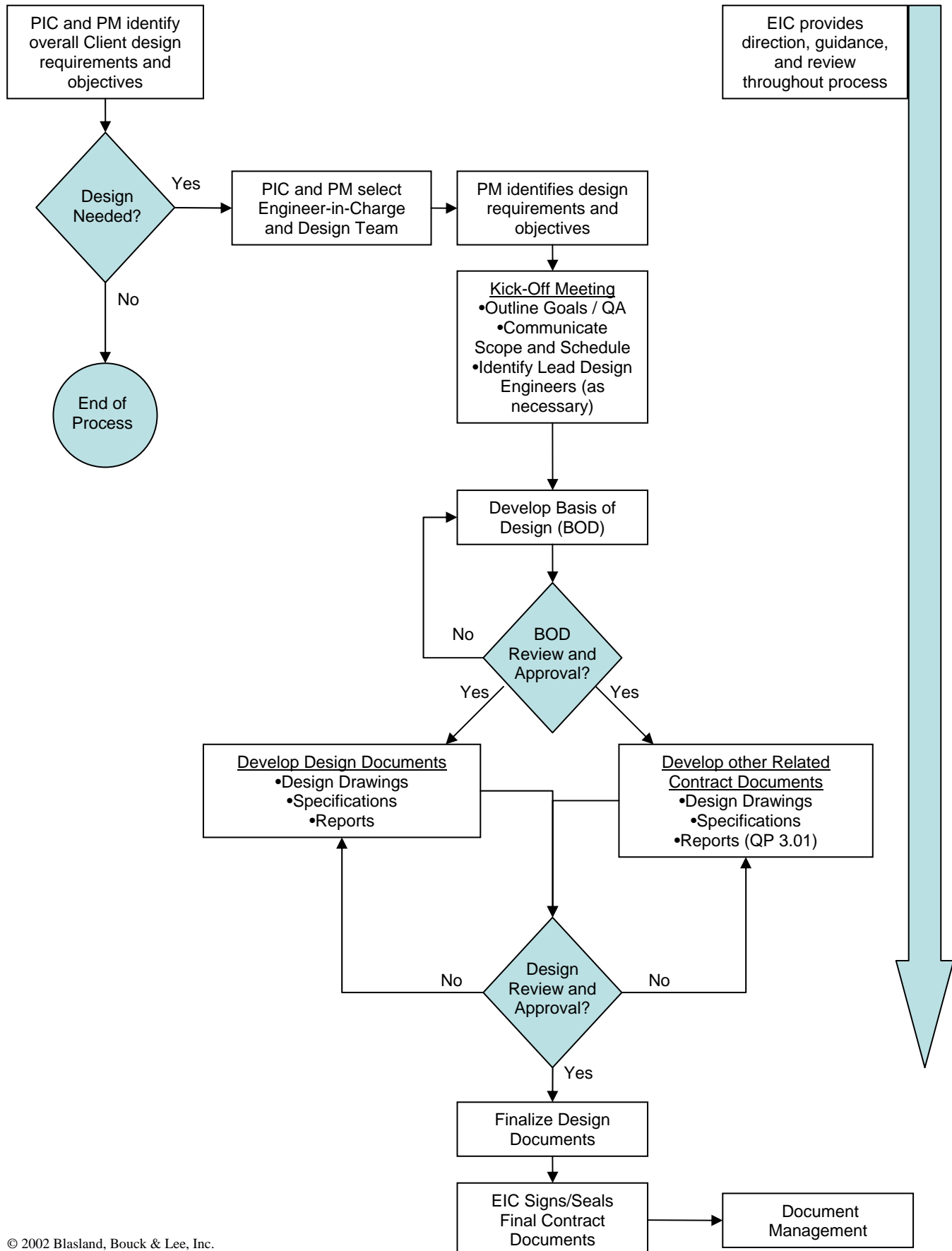
General

All BBL-developed design documents must be completed in accordance with applicable federal, state, regional, and local laws, regulations, and codes. The design effort must be in accordance with appropriate design standards, reference standards, and guidance documents, including, but not limited to, American Society of Testing and Materials (ASTM), National Building (BOCA) Code, National Electric Code (NEC), the National Fire Protection Association (NFPA), and any other standards referenced by the client or that may be applicable to the project. In addition to the above, the EIC and the PM will identify applicable reference and guidance documents for the project.

The elements that the design team should consider during the development of the design documents include, but are not limited to, the following:

- the ability of selected components and systems to perform under the expected condition(s);
- the ability of selected components and systems to respond safely to unexpected conditions (e.g., equipment failures);
- consideration of redundant systems or other safeguards;
- acceptance and/or rejection criteria for the components and systems selected;
- specified client needs and objectives, including type of material(s), manufacturer(s), cost, delivery, and performance;
- constraints related to cost or schedule;
- compliance with applicable local, regional, state, and federal regulatory requirements, standards, and codes, as well as organizational engineering practices;
- technically proven components and systems;
- consideration of unintended uses and misuses;
- the effective coordination and interfacing of all project team members and subconsultants participating in the design process; and
- safety, reliability, serviceability, and maintainability requirements.

The final design documents must appropriately define and detail the design and the designer's intent/requirements. The design documents must be clear and concise and leave no room for interpretation of the designer's intent and requirements by the review agency, client, or the contractor. Performance specifications must clearly define the desired performance criteria. The following flowchart presents an overview of the design process.



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Kick-Off Meeting

A kick-off meeting with the entire design team is held prior to the start of the design process. The kick-off meeting communicates the scope of work, client objectives, schedule, scope change procedures, chain of command, cost accounting procedures, task budgets, the Client Quality Plan, and other important project information. This information is documented in the Project Plan. The project must be discussed in sufficient detail so that the entire project team has an understanding of the desired objective and how it is to be obtained. If the design effort warrants, the PIC, PM, and EIC will identify technical discipline leaders for each of the required disciplines on the project. Where potential risks and exposures have been identified during the contract review phase, a representative from the Legal Division will be asked to participate in the kick-off meeting.

Basis-of-Design Document

For all BBL design-related projects, a Basis-of-Design (BOD) document must be generated and distributed to the entire project team. The BOD is the primary document that provides technical guidance and design intent to the design team. The BOD lays the foundation for the detailed design and forms the bridge between the conceptual, preliminary, intermediate, and final designs. The BOD is generated at the conceptual design level (10%) and is refined, as required, during the design effort. The client reviews the BOD to verify that the final objectives for the project are addressed. The level of detail presented in the BOD must be appropriate to the complexity of the project being performed and the requirements associated with any regulatory order that may be in effect. Large, complex projects require a detailed BOD. For small, less complex projects, the entire BOD may take the form of a brief memorandum. The PIC/EIC/PM must approve the BOD prior to distribution.

Technical Construction Specifications

BBL technical specifications for construction-related projects will be developed in accordance with the Construction Specifications Institute (CSI) standard three-part format (Part 1 – General, Part 2 – Products, and Part 3 – Execution) unless otherwise required by client-specific requirements. It is the responsibility of the project engineer(s) to develop the technical project specifications for their respective areas of practice and for the appropriate inter- and intra-discipline review and coordination within the design team. The EIC and the PM are responsible for the overall coordination and review of the technical specifications. Technical specifications are developed in stages as the project design develops. A listing of required specifications is developed by the project team at the preliminary design stage. The discipline responsible for preparation of each of the CSI Sections is presented below:

<u>CSI Section</u>	<u>Discipline Responsible</u>
1 – General Requirements	Project Manager/Team
2 – Site Work	Civil/Geotechnical
3 – Concrete	Structural
4 – Masonry	Structural
5 – Metals	Structural, Architectural
6 – Carpentry	Architectural, Structural
7 – Moisture Protection	Architectural, Structural
8 – Doors, Windows, and Glass	Architectural
9 – Finishes	Architectural
10 – Specialties	Varies with Project
11 – Equipment	Process/Mechanical
12 – Furnishings	Architectural, Structural
13 – Special Construction	Varies with Project
14 – Conveying Systems	Process/Mechanical
15 – Mechanical	Process/Mechanical
16 – Electrical and Control	Electrical/Instrumentation and Control (I&C)

Technical specifications prepared by a subcontractor to BBL should be checked by the EIC/PM to confirm that they

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are consistent with BBL’s prepared technical specifications and that they meet the clients overall objectives and goals for the project.

Development of Design Drawings

The development of all BBL design drawings must be in accordance with BBL’s latest *Drafting Procedures Manual* and QP 3.02 - Development and Verification of Figures, Tables, and Logs. The CADD group within BBL will not begin development of design drawings until a project-related CADD plan has been developed, an index of required drawings provided, and the preliminary sketches/concepts have been approved by the EIC/PM. The EIC will only sign and seal the final design drawings and other design documents after completing a final review and after all comments have been incorporated. No final design documents are to be provided to any client, review agency, or potential contractor without first being signed and sealed by the EIC. Furthermore, if preliminary, 60% complete, or 90% complete documents are provided to clients, review agencies, or potential contractors, they must be clearly marked as “Preliminary – Not for Construction.” If design drawings are generated for a project where BBL is a partner, only design drawings generated by BBL are signed and sealed by the EIC. If design drawings are prepared by a subconsultant to BBL, the subconsultant shall sign and seal the contract documents they have developed. Design drawings prepared by a subconsultant to BBL should be checked by the EIC/PM to confirm that they are consistent BBL’s design drawings and that they meet the clients overall objectives and goals of the project.

Prior to affixing his or her seal to the final contract drawings, the EIC confirms that all drawings developed by BBL have been checked and initialed by a senior-level engineer supervising that discipline’s design effort. All design documents signed and sealed by BBL personnel are retained in accordance with QP 1.02 – Document and Records Management (available on the corporate Intranet), and must not be destroyed without written consent from BBL’s General Counsel.

Development of Design Reports

The development of all BBL design reports must be performed in accordance with QP 3.01 – Technical Document Process, available on the corporate Intranet. The EIC is responsible to approve any report directed externally to a client or any agency.

Development of Design Project Calculations

The development of all BBL design calculations must be in accordance with QP 3.03 – Preparation of Calculations. Project-related calculations are an important element in the design process, and each project engineer is responsible for preparing and checking his/her calculations. At a minimum, project engineers will maintain and file the following calculations:

- calculations showing compliance with regulatory safety or environmental codes;
- all calculations relative to process performance or sizing;
- calculations for equipment sizing;
- all discipline design engineering calculations;
- survey control calculations;
- pipe and channel sizing calculations; and
- quantity take-off calculations.

Project Review Milestones

Formal verification and technical review during the design process is performed during each phase of the design project. It is the responsibility of the PM to verify that all technical construction specifications referring to each technical discipline represented in a document have been reviewed by an individual qualified in that discipline who coordinates with representatives of the other disciplines involved. For example, the electrical engineer checks the process/mechanical specifications for coordination of electrical items specified in the process/mechanical equipment

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section. Project-specific specifications from past BBL projects shall not be used unless the individual discipline project engineers have confirmed that the reference standards listed in Part 1 of the specification have been recently updated, all references to the past project have been removed, and the entire specification is applicable to the current project. The PM will be responsible for scheduling and documenting all design reviews.

The EIC and/or PM defines the time-phased design procedures with checkpoints appropriate to the nature of the work being performed. In general, design reviews are performed at the preliminary design level (30%), 60% design completion, 90% design completion, and 100% levels or as noted in the BOD. The extent of each design review and/or evaluation depends on the intended use of the work, its design complexity, and the nature of the environmental program to which the results apply. The reviews are performed both internally and externally with the client. For complex or large design projects, the PIC/EIC shall determine early in the project if a Technical Advisory Team (TAT) is required to perform the design reviews. The TAT shall comprise senior technical design professionals currently not working on the project to provide a “fresh look” during the design review(s).

The quality aspects of the design must be unambiguous and adequately define elements critical to quality. At the conclusion of each design phase, a formal, documented review of the design results is conducted. The design review process verifies that all necessary design documents, drawings, guides, instructions, specifications, and data sheets are documented and reviewed, approved by authorized personnel, and distributed to personnel performing the work. The design review identifies anticipated problems or inadequacies and corrective actions and verifies that the final design (100%) meets the client’s requirements and objectives.

4.0 Related Forms and Guidance Documents

- Project Planning Template;
- *Project Managers Handbook*;
- Project Authorization Form;
- Professional Services Agreement;
- Change Order Form;
- Confidentiality Agreement (as required);
- Subconsulting Agreement for Professional Services;
- Subcontractor Change Order Form; and
- *Drafting Procedures Manual*.

5.0 Related Quality Procedures

- 1.02 - Document & Records Management;
- 2.01 - Project Planning and Review;
- 2.02 - Procurement;
- 3.01 - Technical Documents Process
- 3.02 - Development and Verification of Figures, Tables, and Logs;
- 3.03 - Preparation of Calculations;
- 3.05 - Documentation of Field Activities; and
- 3.10 - Design/Build Services.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____

BBL	TOPIC: DATA MANAGEMENT QP 3.09		
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STATEMENT OF POLICY:

It is BBL's policy that data management follow a common process to establish and meet data quality objectives in compliance with client requirements, and federal and state regulations. A typical BBL project entails acquiring, interpreting, and managing data. This procedure presents the general protocol to be followed for data management.

Purpose

The purpose of this Quality Procedure (QP) is to provide a common process for data collected during field activities and data derived from field activities (e.g. field measurements, field observations, laboratory analytical results, engineering and scientific data analysis or calculation results). This QP also includes a data management system that manages project data for easy analyses, exchange, and long-term storage, with the flexibility to be modified to accommodate varying demands.

Responsibilities

Project Manager (PM) – The PM is responsible for the project-related administration of this QP.

Project Team Members – The project team members are responsible for compliance with this QP.

Definitions

Data Quality Objectives – Qualitative and quantitative statements that clarify study objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions.

Systematic Planning Process – A planning process that can be accomplished through several demonstrated techniques, including the data quality objectives process and the observational method.

Quality Assurance Project Plan – A formal technical document containing the detailed quality assurance (QA), quality control (QC), and other technical procedures for evaluating the quality of environmental data prepared for each data collection activity and approved prior to collecting the data.

DESCRIPTION OF PROCEDURE:

1. General

Data are needed to characterize site conditions, document field observations, and identify the nature and extent of chemicals of concern for planning, assessment, engineering design, construction management, and remedial actions. This procedure presents the general data management protocol that is followed. Appropriate project-specific data management procedures are established in compliance with the requirements of clients and regulatory agencies.

2. Planning and Scoping

PMs guide planning activities and inform staff of the requirements of the project. The planning process identifies individuals who will contribute to the quality of the environmental program results and promotes their participation in this process. Work involving the generation, acquisition, and use of environmental data is planned and documented.

In addition, activities and projects involving the design, construction, and operation of environmental technology are

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planned and documented. The type and quality of environmental data needed for their intended use is identified and documented using a systematic planning process. Project-specific planning involves the key users of the data, clients, and technical staff responsible for obtaining, analyzing, and evaluating the data.

The planning process includes direct communication between the client and the consultant that provides a clear understanding by all participants of the needs and expectations of the client and the service or results to be provided by the consultant. A systematic planning process is established, implemented, controlled, and documented, as necessary, to:

- identify the client's needs and expectations for the work to be performed;
- identify the technical and quality goals that meet the needs and expectations of the client;
- translate the technical and quality goals into specifications that will produce the desired result;
- consider cost and schedule constraints within which project activities are required to be performed; and
- identify acceptance criteria for the result or measures of performance by which the results will be evaluated and customer satisfaction will be determined.

The PM reviews and approves planning documentation for implementation before the work commences. Such documentation includes but is not limited to work plans, schedules, and quality assurance project plans (QAPPs).

- Refer to QP 1.02 – Document and Record Management for specific guidance on document control, records management, filing, and records retention issues and QP 3.05 – Documentation of Field Activities for guidance on appropriate chain of custody and confidentiality requirements for the affected records. These procedures may be found on the corporate Intranet.

Records that may require controls during the data management process include:

- assessment results and findings;
- calculations (including those from data reduction and analysis);
- calibration data;
- data usability results;
- field logbooks;
- inspection results;
- instrument test data;
- materials testing results;
- personnel qualifications;
- sampling and analytical QC data (including objective and statutory evidence);
- sampling and analytical data; and
- technical and readiness review results.

Project planning for environmental data collection includes, as applicable:

- defining the project/task scope and objectives and the desired action or result from the work;
- identifying organizations (e.g., sampling groups and analytical laboratories) that will participate in the project and their role in planning, implementation, and assessment activities;
- identifying the data needs required to achieve the desired action or result (what is the question being answered by the data need?);
- identifying appropriate detection limits for all uses of the data, including risk assessment;
- identifying sampling design to meet the statistical needs of the project;

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- identifying QA and QC requirements to establish the quality of the data collected or produced, including data quality goals (e.g., precision, bias), acceptable level of confidence (or statistical uncertainty), and level of data validation and verification needed;
- identifying the documentation needed to adequately describe the quality of the results;
- identifying necessary personnel, their necessary skills, and required types of equipment;
- identifying special applicable regulatory requirements and other constraints (e.g., time and budget);
- identifying conditions under which suspension of work will be necessary;
- determining assessment tools needed (e.g., program technical reviews, peer reviews, surveillances, readiness reviews, and technical audits);
- identifying methods and procedures for storing, retrieving, analyzing, and reporting the data produced (based on the intended use of the data); and
- identifying possible methods and procedures (including waste minimization objectives) for characterization and disposal of contaminated sample material that may be accumulated during the project.

Project-specific planning for environmental technology includes, at a minimum, the identification of the following elements:

- acceptance criteria for the completed systems;
- delivery, handling, storage, identification, inspection, testing, and installation requirements;
- notifying organizations that will participate in the project and their role in planning, design, construction/fabrication, operation, and assessment activities;
- personnel, equipment, and other resources required;
- program and task scope and objectives, and a list of the primary activities involved;
- program technical reviews, peer reviews, surveillances (oversight), technical and QA audits, readiness reviews, and other assessment processes;
- project and QA records required;
- specific environmental technology components to be designed, fabricated, constructed, and operated; and
- technical, performance, regulatory and quality standards, criteria, and objectives.

Documentation of project and activity planning includes the appropriate use of work plans, QAPPs, design criteria, schedules, organizational charts, and conceptual design drawings.

3. Assessment of Data Usability

Based on the items set forth in the planning and scoping phase of the project, data usability is assessed by comparing the planned outcome with the actual outcome. This type of assessment will vary depending on the size and complexity of the data collection effort and the type of data.

Activities performed during environmental data operations that affect the quality of the data are assessed regularly and the findings reported to management to verify that the requirements stated in planning documents (e.g., QAPPs, work plans, and sampling plans) are being met. Appropriate corrective actions are taken, and their adequacy verified and documented, in response to the findings of the assessments.

Data obtained from a method or instrument found to be nonconforming to specifications are evaluated to determine the impact of the nonconformance on the quality of the data. The impact and appropriate action taken is documented.

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Data obtained from environmental data operations is assessed, verified, and qualified according to the intended use. Specifically, for environmental data, it is critical to review the following:

- data quality objectives, to determine whether the data are usable for the intended purpose;
- detection limit adequacy;
- sample representativeness;
- sampling error; and
- laboratory error.

Any limitations on the intended use of the data is expressed (quantitatively, to the extent practicable) and documented in any reporting of the data, either in print or electronically.

Any data obtained from sources that did not use a quality system equivalent to this procedure is also assessed for the following:

- source of data;
- documentation of sampling and analytical plan, and QAPP;
- documentation of adherence to the QAPP;
- sample representativeness;
- laboratory and methods;
- detection limit adequacy to meet the needs of the project;
- laboratory or data validator data review and validation qualifiers; and
- comparability of sampling and analysis to more current data.

Project reports containing data, or reporting the results of environmental data operations, are reviewed independently (i.e., by individuals other than those who produced the data or the reports) to confirm that the data or results are correctly presented. These reports are approved by management prior to release, publication, or distribution.

The qualification of data is based on the performance measures for the project specified during the design process (or its equivalent), or in approved modifications to the planning documents. The usability of the products from data operations is determined relative to the needs and expectations of the client.

Project reports should be peer reviewed to determine technical acceptability as required by management.

4. Performance and System Audits

Data collection activities that may affect data quality are evaluated through audits to verify that the requirements of the procedures and other planning documents are met. Audits include performance evaluation audits and technical systems audits. Both self-assessments and independent assessments are documented, reported to, and reviewed by management.

The purpose of these assessments is to provide management and clients with an ongoing evaluation of the quality of the results produced by BBL's data collection activities and to verify that the objectives for a given project are met.

Several types of audits can be conducted. These include management audits, laboratory audits, and field audits.

- **Management audits** evaluate quality management functions related to data collection, and verify that they are being performed in accordance with the project-specific procedures and this procedure.

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- **Laboratory audits** verify continuity of personnel, instrumentation, and QC requirements. They typically consist of random data audits and review of laboratory QC documents, including sample receiving, sample log-in, sample storage, chain of custody, sample preparation and analysis records, instrument operating records, and any other documentation related to the generation of analytical data by the laboratory.
- **Field audits** evaluate procedures for sample identification, control, chain of custody, field observations, and sample preservation, packaging, and shipping.

5. Data Management System

The data management system collects and manages project data that can be used efficiently and reliably. Benefits of the system include the ability to:

- capture and preserve all relevant project data;
- generate and manage historical and current, reusable, interoperable data;
- provide for efficient and reliable delivery of data (which may be in the form of result tables, data summaries, statistical summaries, calculated results, criteria exceedences, “databox” figures, etc.);
- provide for secure and controlled web-based access and delivery of data; and
- implement appropriate and cost-effective tool sets such as tools for virtual collaboration and data access.

The PM designates a project team member responsible for project data management. The PM designates a data management system, such as BBL’s common database tool, to store and manage the project data. The project database must be stored on a BBL network server on which regular backups are run and security is maintained.

BBL has developed a common database structure and suite of tools that should be used as the project data management solution, unless a different system is requested by the client, or the client has requirements that the BBL system can not meet. This database management system focuses on storing chemistry (analytical), survey (positional), and field parameter (measured and analyzed) data sets. The database can be modified or further customized to support the management of data for all industries that BBL supports. The common database was developed to provide one application that can be used for most BBL projects, requiring users to be proficient with one system. The use of the common database makes accessing data more efficient and more reliable. In addition to the managing chemistry, field parameter, and survey data, the database includes automated tools to perform the following functions:

- data tracking and reporting delinquent samples;
- importing electronic data deliverables;
- calculating results;
- generating report-quality tables;
- generating files for importation into “databox” figures;
- exporting routines to web access, GIS, or other applications; and
- ability to export data to other standard database applications (EQuIS, Geotracker, etc.)

The data management system digitally captures and maintains project data for analyses, exchange, and long-term storage. The database is stored on the BBL network, backups are run, and security is maintained. The database becomes part of the project file, and the integrity of information is maintained. This is accomplished by the following methodology:

- users must be trained database operators (routines may be developed for non expert access to the data);
- all required fields must be completed to properly document the data; and
- the database is part of the “audit trail” for project/process audits conducted by BBL.

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As project needs expand, the common database can be expanded to accommodate new demands. The database will continue to serve as a resource for BBL projects that generate, manage, and store data. Additionally, projects that require long-term data storage, such as litigation support, OMM, and municipal work, will have a data set that can be preserved for long stretches of time and recovered as needed.

The common database will also serve as a data repository. Project information will be accessible from the database, and data sets can be “cross-queried” to develop a true enterprise-based information management system. The use of a common database structure and consistent data capturing methodology will add significant value to assessing data sets.

6. Corrective Actions

Corrective actions are considered when BBL’s Standard Operating Procedures are not met, when non representative conditions are indicated, or when specific tasks have not been performed. Corrective actions may require additional data collection activities. When deviations or deficiencies arise for projects using managed data, the following protocol is performed by the project team:

- identify an issue that may require a corrective action (e.g., sample holding time exceedences for chemical or physical analysis, sample not collected, wrong preservative used);
- communicate and implement a mechanism to suspend or stop activities affecting or affected by the deficiency (e.g., issue restricted usage letters and labeling for materials impacted by a potential corrective action);
- determine whether a corrective action is necessary by involving the PM and all appropriate project, client, laboratory, and/or subcontractor individuals (e.g., evaluate whether the loss of a particular data point is significant in respect to the project objectives, no further action required);
- identify the causes of the deficiency (e.g., laboratory error, calculation error);
- establish appropriate corrective action responses (e.g., reject data, recollect data); and
- verify the timely implementation and effectiveness of the corrective action taken (e.g., the PM performs follow-up activities).

Problems or deviations that are identified by the project team will be reported to PM or field team leader. The corrective action process is initiated by the PM or field team leader either in the field or during data analysis activities. Although corrective action for deviations from standardized procedures may not always be required, all deviations from project planning documents should be noted in the field logbooks or documented in the data analysis sheets, along with the justification and rationale for the changes.

- END OF PROCEDURE -

**Chief Executive
Authorization:** _____

Date: _____

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STATEMENT OF POLICY:

It is BBL's policy to perform design/build services in a safe, compliant manner using a "best team" approach. Design/build services will be technically sound (as defined by the industry standard of care) and focused on client needs while maintaining appropriate risk management.

Purpose

This quality procedure (QP) provides a common process for BBL Environmental Services, Inc. (BBLES) to perform design/build services (i.e., turnkey design and construction/construction management services). When performing design/build services, BBLES is the prime contractor and BBL, as the subcontractor, will provide design-related services. This QP does not apply when BBL is performing stand-alone design services (QP 3.08 – Development of Design Documents) or construction inspection services (QP 3.07 – Construction Inspection and Observation Services).

Responsibilities

Principal in Charge (PIC) – The PIC has corporate accountability for the client account under which design/build services will be performed. The PIC, in association with the Resource Manager/Coordinator of his or her group, is responsible for the identification and selection of the Project Manager (PM), who, along with the PIC, designates the Engineer in Charge (EIC), Geologist in Charge (GIC), and Construction Principal (CP) for the project. The PIC and PM are responsible (with input from the EIC and CP) for developing the scope of services and budget for the project. The PIC and the PM are also responsible for assembling the appropriate design/build project team. The team will work in concert to minimize the potential for liability, conflicts, or a misunderstanding of client expectations associated with the design/build activities.

Construction Principal (CP) – The CP is an officer of BBLES (or an individual authorized by the President of BBLES to perform CP functions) and is accountable for budget and risk management of construction services performed as part of the project. The CP (or an individual designated by the CP) is responsible for the following:

- Participating in project design constructability reviews at the request of the PIC, EIC, GIC, and/or PM during the project design stage;
- Involved in the overall construction effort from initial scoping through completion and startup;
- Verifying that construction work is undertaken by appropriately qualified staff and subcontractors;
- Meeting the industry standard of care in accordance with applicable regulations and licensing requirements; and
- Providing input on certification of construction activities (e.g., review and comment on a construction completion report) when construction is complete.

Engineer in Charge (EIC) – The EIC is a Professional Engineer (P.E.) registered in the state of the project and authorized under that state's licensing laws to oversee the project's design-related activities. The EIC is an Officer of BBL or an individual authorized by the President of BBL to perform EIC responsibilities (i.e., authorized by BBL to sign and seal design documents). The EIC has responsible charge of the project engineering services; this is usually defined as "having direct supervision and/or control of the professional services being provided." The EIC reviews the design team's qualifications, approves the selection of the design team members, and is involved in the overall design effort, including conceptual, preliminary, and final design. As such, the EIC verifies that all design elements are undertaken by appropriate design team members so as to achieve a project design that meets acceptable engineering standards and codes, meets the industry standard of care, and is produced in accordance with the applicable state licensing requirements. Upon completion of construction, the EIC may be required (by regulation and/or client) to certify that the construction was performed in accordance with the design documents (e.g., certify a construction completion report). Prior to certifying construction completion, the EIC will consult with the CP.

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Geologist in Charge (GIC) – When a Professional Geologist is required by applicable state law, regulatory agency, or when agreed to in advance with the client, the GIC is a Professional Geologist (P.G.) registered in the state of the project and authorized under that state’s licensing laws to oversee the project’s geologic and/or hydrogeologic activities. The GIC is an Officer of BBL or an individual authorized by the President of BBL to perform GIC responsibilities (i.e., authorized by BBL to sign and seal documents). The GIC has responsible charge of the project geologic/hydrogeologic services; this is usually defined as “having direct supervision and/or control of the professional services being provided.” The GIC reviews the proposed project team geologists’ qualifications, approves the selection of the project team geologists, and is involved in the overall project design effort related to geologic/hydrogeologic issues. As such, the GIC verifies that all geology-related design elements are undertaken by appropriate design team members so as to achieve a project design that meets acceptable standards and codes, meets the industry standard of care, and is produced in accordance with the applicable state licensing requirements. Upon completion of construction, the GIC may be required along with the EIC (by regulation and/or client) to certify that the construction was performed in accordance with the design documents (e.g., certify a construction completion report).

Project Manager (PM) – The PM is responsible for the administration of this procedure and reports to the PIC, CP, EIC, and GIC. The PM is responsible for administering the activities of the project team (e.g., scheduling project work activities, managing the client relationship, interacting with third parties, providing quality assurance). If the PM and CM are not the same person, the PM delegates construction-phase financial management and day-to-day project management responsibility to the CM. It is preferable that the PM has client-specific project experience and be a Professional Engineer.

Health and Safety Officer (HSO) – The HSO (or an individual designated by the HSO) has overall responsibility for the health and safety of BBL employees during the implementation of construction activities. The HSO is responsible for the development and approval of a site-specific health and safety plan (HASP) covering construction services to be completed as part of the project. Furthermore, the HSO is responsible for addressing any health and safety questions, concerns, or issues that may arise during construction activities and, when applicable, for performing health and safety audits of the construction work.

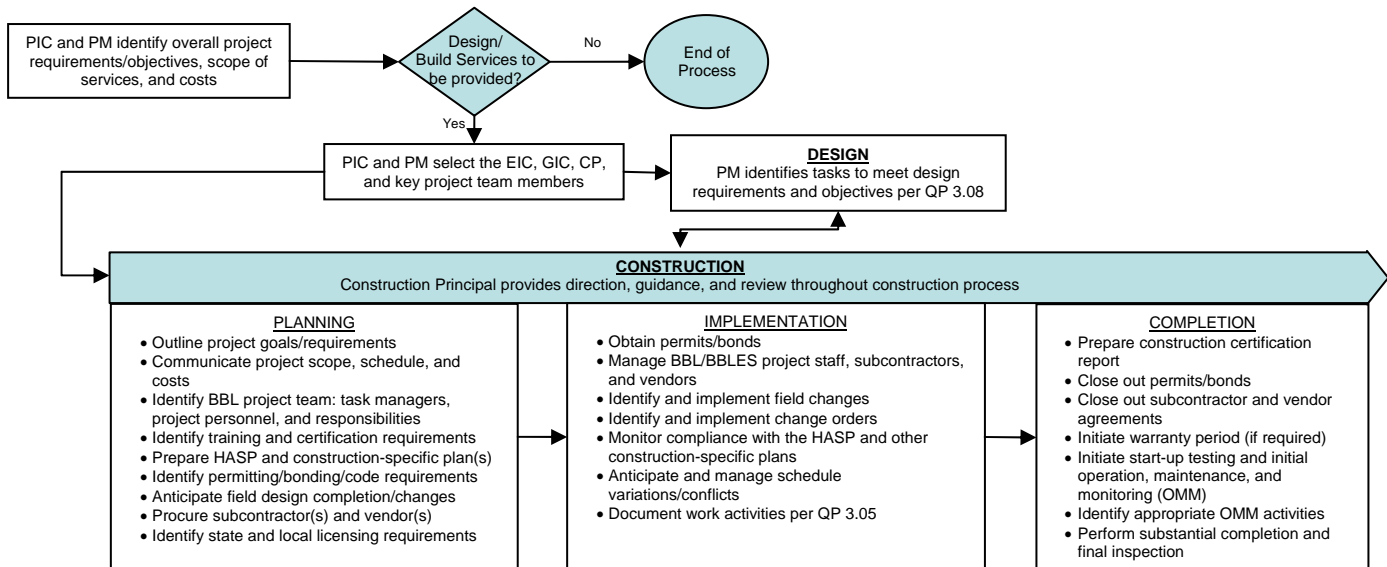
Construction Manager (CM) – The CM is responsible for the day-to-day management of construction field activities and reports directly to the PM. The CM serves as the first-line manager responsible for the adherence of construction work to the design documents, health and safety plan, and applicable regulations. The CM interacts directly with other project staff (e.g., design task managers), subcontractors, and, if so designated by the PM, the client and regulatory personnel. If so designated by the PM, the CM may also assume financial project management for the construction phase of the project. It is preferable that the CM have client-specific project experience.

Project Personnel – Project personnel assigned to the project must be familiar with this QP and the overall project scope of work and the task budget assigned to them. Project personnel are responsible for achieving the individual tasks assigned to them and must be capable of completing these tasks. Task managers are selected by the PIC/EIC/GIC/CP/PM at the beginning of the project and are designated in the project plan.

DESCRIPTION OF PROCEDURE

This section provides a summary of procedures related to key project milestones and activities that are reviewed and understood by appropriate members of the project team. By their nature, design/build services incorporate both design and construction services and are managed by a single entity (BBLES) and are performed through a wide variety of approaches, depending on the desired end-goals of the client. This section serves to outline key procedures for design/build projects. The following flowchart presents the process overview:

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1.0 Design Services

In general, design services for all design/build projects are performed in accordance with QP 3.08 – Development of Design Documents, with the following additions/clarifications:

- The PM will work with the CP to identify an individual or individuals from the construction team (e.g., the CP, the CM) to perform constructability reviews of the engineering design. The CP or designee is present at the project kick-off meeting and all other designated design review milestones (e.g., 30-60-90% design document reviews) and provides comments directly to the PM or design task manager.
- It is recognized that certain design/build projects will not require the same level of detail in engineering drawings and technical specifications as a stand-alone, traditional design package intended for bidding. Given the turnkey nature of design/build services, all work is the responsibility of one entity: BBL/BBLES (e.g., certain details of construction that do not affect/alter the design intent may be identified during construction by the CM). The project may be performed on a fast-track schedule, it may not be formally bid to construction companies, and the client may not expect/desire full design documentation. Formal technical specifications based on the Construction Specifications Institute (CSI) standard may not be required, as determined by the PM in consultation with the PIC and CP. If formal CSI specifications are not developed, as detailed in QP 3.08, it is the PM's responsibility to adequately specify (via specifications on the drawings or other means) the work.
- Preliminary engineering drawings are clearly marked *Preliminary - Not for Construction*, as required in QP 3.08, and are not to be used by the CM for construction until they are deemed to be complete and final by the EIC. Once drawings are approved by the EIC, changes to the engineering drawings are considered field changes. It is the responsibility of the CM that field changes be coordinated with the PM, be reviewed and approved by the EIC, and be recorded on the drawings in anticipation of record drawing preparation at the completion of construction.

2.0 Construction Services

Section 2 describes the three phases of construction services (Planning, Implementation, Completion) and key procedures related to design/build construction services.

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2.1 Planning

Certain project elements common to design/build projects are addressed prior to beginning construction, as follows:

Project Plan – The Project Plan is reviewed by the PM and project team prior to the start of construction and modified by the PM with input from the CM and project team, as necessary, to include information specific to the construction phase of the project. The CM will be familiar with the Project Plan and is responsible for understanding and implementing the construction phase of the plan appropriately.

Project Schedule – Updating and distributing construction schedules on a periodic basis provides a performance measurement and allows all involved parties the opportunity to maintain or adjust their particular operation(s), as needed, to remain on schedule and to meet their own goals and those of others. Computer software, including Microsoft Project® and Primavera® are available and commonly used for schedule preparation. Schedule formats include bar charts, Gantt charts, and the critical path method (CPM).

Subcontractor/Vendor Procurement – The means and methods of selecting and contracting with subcontractors and vendors is highly variable and based on many inputs (e.g., client preference, local contracting methods, union rules, insurance and licensing requirements, past performance/experience, pricing, availability). The CM and CP are responsible for recognizing and accounting for these variables and then selecting and completing procurement of subcontractors and vendors. The CM is responsible for obtaining evidence of insurance from all subcontractors as part of the subcontractor procurement process. Major subcontractors (i.e., those directly responsible for key project elements and/or a significant portion of the project cost) must be approved by the CP. BBLES subcontract agreements and vendor purchase orders must be signed by an Officer of BBLES (typically the CP) or a person authorized by the President of BBLES to sign such subcontractor agreements/purchase orders, and must be executed before the subcontractor begins work or equipment/material is delivered.

Training and Certifications – Construction projects often involve work tasks that require specific training and certifications (e.g., asbestos certifications; confined space entry, excavation safety, sediment and erosion control training). Training/certification may be required by regulatory agencies or by the BBLES HASP or Project Plan. The CM is responsible for recognizing project-specific training and certification requirements and for verifying that BBLES employees and/or subcontractors/vendors have the required training/certifications. Project-specific training and certification requirements are documented in the Project Plan.

Licenses – Some state and local jurisdictions have unique licensing requirements for construction work. Often, BBLES must carry a contractor's license in the jurisdiction where the work will be performed in order to serve as the prime contractor on a project. Therefore, the CP or CM will contact the Legal Division as part of the project planning process for assistance in identifying licensing requirements for the given work and for help in securing such licenses. In addition to licenses carried by BBLES, the CP/CM must be aware of licensing requirements for subcontractors/vendors on the project and require documentation of current licenses as part of the procurement process.

Insurance – Clients and some state/local jurisdictions have unique insurance requirements for construction work. BBLES may be required to carry additional project-specific insurance, depending on the type of work to be performed. Therefore, the CP or CM will contact the Legal Division as part of the project planning process for assistance in identifying insurance requirements that are applicable for the given work and will also confer with the PIC concerning client-specific construction-related insurance requirements. In addition to insurance carried by BBLES, the CM must be aware of "flow-down" insurance provisions for subcontractors/vendors on the project and require documentation of current insurance as part of the procurement process.

Permits, Bonds, Taxes, and Fees – Construction work often requires BBLES and its subcontractors/vendors to obtain local and state permits. In addition, project-specific fees, bonds, and tax requirements may exist. Therefore, the CM, in conjunction with the CM, will investigate and identify permitting requirements for the project, assign responsibility for

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obtaining each permit (i.e., BBLES or a subcontractor/vendor), and document the permitting process in the Project Plan. In addition, the CM will identify project bonding requirements, as requested by the client or local jurisdiction (e.g., a performance bond for work in public roadway). Again, project bonding requirements will be documented in the Project Plan. Project-specific taxes and fees must be identified by the CM via consultation with the client, Legal and Finance Divisions, documented in the Project Plan, and reflected in the Project Authorization Form, as necessary.

2.2 Implementation

Key project elements common to the implementation of construction projects are as follows:

Pre-Construction Meeting – Prior to commencement of construction activities, a pre-construction meeting is conducted. This meeting is typically attended by representatives of the client, the property owner, the CM, key subcontractors/vendors, and other key project staff. The following items are typically discussed at the meeting: project schedule, roles and responsibilities, coordination/lines of communication, permit requirements, and health and safety requirements. Topics and an outline for pre-construction meetings are available on the corporate Intranet. The CM will prepare meeting minutes and distribute the minutes to all of the meeting participants and other appropriate parties.

Field Documentation – QP 3.05 – Documentation of Field Activities, which provides guidance for documenting construction activities, is available on the corporate Intranet. QP 3.05 addresses the reasons and need for proper documentation, as well as the appropriate tools, formats, and entries to be used. A Construction Activities Report (also available on the corporate Intranet) is used to document the activities performed and includes project identification information, project status, a summary of site inspections, and a summary of findings. The CM keeps written notes of items discussed and verbal approvals in the project files. Discussions and oral approvals are documented in the Construction Activities Report. Written documentation is essential for the establishment of a historical record for reference at a later date. The entry of detailed information and activities in field books and prepared forms demonstrates compliance with the Project Plan, work plans, and/or contract terms and conditions. In some instances, these reports may be used as evidentiary records for disputed contract work.

Photographs – Project photographs (photos), if allowed by the client, are an integral and important part of project documentation. Regardless of the equipment (e.g., disposable camera, 35-mm camera, digital camera, video camera) or format used, a photo log is maintained that describes the project, date, location, orientation, and description of the subject matter of each photo. When a video camera is used, recorded voice and available data entries are included. When a photo log is used, photo numbering is maintained to cross-reference the entered log data. This information is also logged on the back of the individual photo. Photos are typically stored/filed together in chronological order or by major elements of project work. Photos are typically taken of milestone events and, on a periodic schedule, to confirm contract and client requirements. Milestones include pre-construction conditions, significant events, and post-construction conditions. Periodic events can be photographed monthly, weekly, daily, or hourly, depending on progress and need. Photos provide an excellent evidentiary record for contract work, especially for documenting underground work that cannot easily be verified upon completion.

Sampling – Sampling methods and frequencies are stipulated in the contract documents and generally include construction material and/or environmental sampling. Examples of test method procedures for construction materials include the American Society of Testing Materials (ASTM), the American Concrete Institute (ACI), and the American Institute of Steel Construction (AISC). BBLES may subcontract with an independent material testing company for the collection and testing of construction material samples. In that case, the CM and PM are responsible for the scheduling, coordination, and documentation of this activity. Typically, environmental samples are collected at the site and submitted to an offsite laboratory for analysis. In cases where BBL employees are collecting samples (e.g., soil, air, wipe, sediment, or water samples), only trained personnel are allowed to collect samples in accordance with stipulated sampling procedures and requirements. Refer to QP 2.04 – Calibration and Control of Measuring and Test Equipment, QP 3.04 – Requirements for Field Sampling Plans, QP 3.05 – Documentation of Field Activities, and QP 3.06 – Field Sampling, Measurement, and Observation, available on the corporate Intranet, for further guidance. BBL/BBLES or the client may subcontract with an independent company for the collection of environmental samples. The CM is responsible for scheduling, coordinating, and documenting the sampling activity. The CM

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is responsible for coordinating with, scheduling with, and arranging delivery of environmental samples from and to the offsite laboratory.

Manifests – A manifest is a legal, itemized, evidentiary document that lists pertinent information on transport content and accompanies the transporter during shipment of the content from one location to another. In most cases, the content is hazardous or nonhazardous waste that is being transported from a generator (owner/client) site to an offsite disposal facility. The state in which the material will be disposed of and, in some cases, the disposal facility itself will specify manifest content and format. Each manifest form has a unique code that applies only to a specific load of material. Each manifest is filled out prior to shipment, and, at a minimum, includes:

- the date, time, location;
- description of material and/or U.S. Department of Transportation (USDOT) material code, estimated weight/volume;
- the name and signature of the owner or the properly delegated owner-authorized representative;
- the hauling company's license number, name, and representative's signature;
- placarding requirements;
- reportable quantities and other paperwork; and
- special handling instructions and additional information.

Upon completion of transport, the offsite disposal facility fills in the remaining appropriate manifest information, including the date and time received and the facility's confirmation of weight or volume. Authorized agents for both the transporter and the offsite disposal facility sign and complete the execution of the manifest. Each respective party involved in the transaction (i.e., generator or authorized representative, transporter, and offsite disposal facility) submits appropriate manifest copies to designated authorities within specified time frames using certified U.S. Mail.

At times, for the convenience of clients, BBL employees may sign manifests. Only BBL employees who have completed a USDOT Hazardous Materials Transportation training class (available on the corporate Intranet) may sign a manifest. BBL employees may only sign when authorized, in writing, by the client. The CM obtains a copy of the written authorization from the client and uses the authorization language and terms established. The written client authorization must be in a form acceptable to the Legal Division prior to any BBL employee signing the manifest.

Project Files – BBL's standard filing format is outlined in QP 1.02 – Document and Record Management, available on the corporate Intranet. Construction projects may require additional filing categories, depending upon requirements of the project.

Progress Meetings – Pre-construction and construction progress meetings provide an opportunity for all parties involved in a project to ask and answer questions, discuss and update schedules, review site-specific health and safety requirements, address design/construction clarifications, review payment status, and raise other pertinent issues. Meeting minutes provide an essential record and accurately document meeting discussions. The CM prepares meeting minutes for construction progress meetings. Meeting minutes are typically presented in a memo format, list attendees and their affiliations, and address the project schedule, old and new business issues, out of scope work, and schedule/cost impacts. A disclaimer advises participants to respond to the author in writing within a specified period of time to comment on the content of meeting minutes. Meeting minutes are distributed to all meeting participants and other identified parties.

Changes in Work – The CM, in consultation with the PM, is responsible for identifying changes in work or conditions that may result in the need to perform services outside the scope of the project. Recognition of changing work conditions is important and may lead to development of change orders (both to the client from BBLES and from subcontractors/vendors to BBLES), revisions to the site HASP, new licensing/training/insurance requirements, changes to project schedule, and other important project modifications. Changing work conditions are documented and communicated to the client. Resulting change orders require client approval prior to any additional work being performed.

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2.3 Completion

Key elements common to the completion stage of construction projects are as follows:

Certification – When required, a P.E. (in most cases the EIC) will certify that the construction project was completed in substantial accordance with the contract documents. In order to certify the construction work, the P.E. in responsible charge must either observe the construction work directly or delegate full-time observation to the CM or another individual. Periodic site visits, inspection of work, and progress meetings between the certifying P.E. and the CM occur as needed. In some regulatory jurisdictions, the GIC is required to certify project completion, typically via preparation of a project completion report required by a regulatory agency that is focused on the geologic/hydrogeologic aspects of the project. In this case, the GIC must observe the geology-related construction work directly or delegate full-time observation of this work to the CM or another individual. Periodic site visits, inspection of work, and progress meetings between the certifying GIC and CM occur as needed.

Substantial Completion – Substantial completion occurs when work is sufficiently complete in accordance with the contract documents, allowing the client to occupy the facility or utilize the work for its intended use (e.g., beneficial use). Few items in a project schedule are as important as the date of substantial completion. Liquidated damages, reduction in retainage, warranties, and other factors are often connected to this date. The EIC and/or the PM are normally assigned the duty of certifying the date of substantial completion. Upon substantial completion, the CM typically develops a list of work items remaining to be completed (i.e., a punch list). Work can be certified as substantially complete if it is completed to the point that the client can use the work for its intended use, albeit with the presence of some punchlist items. Tracking logs are used to highlight key issues and to bring them to timely resolution.

Final Inspection – Final inspection of a construction project is often performed with the client when the project is near completion. The CM, in consultation with the PM, specifies the scope and timing of this inspection and arranges the client's participation to confirm or deny final acceptance. A report is prepared that includes project identification, status, scope of inspection, and summary of the findings. Any work remaining to be completed, as well as deficiencies that require correction before final acceptance (i.e., punch-list items), is listed in this report, including any necessary follow-up actions.

Startup Testing and Initial OMM – BBLES is often contractually responsible for startup testing and initial OMM of a system constructed as a design/build project. This work begins at substantial completion and typically involves demonstrating that the constructed system is operating within the established design parameters. A completed OMM manual is developed to document necessary startup procedures and testing. Documentation of startup testing and initial OMM activities are included in the final record documents in order to demonstrate that BBLES has delivered a complete, fully functioning system in accordance with the contract documents. Note that the initial OMM period needs to be defined by the project contract as the period of OMM necessary to demonstrate a contract-defined system performance period that is tied to final acceptance.

Final Acceptance – An important aspect of project closeout is obtaining final acceptance of the work by the client. This entails delivery of the completed work (including punch-list items), as well as completion of final record documents. These final record documents typically include final record drawings, the OMM manual, project correspondence, certifications, permits, test results, warranties, vendor product information, and other client requirements. Preparation of the final record documents commences prior to the completion of a project, thus allowing for timely preparation of a complete report (see QP 3.01 – Technical Documents Process, available on the corporate Intranet). Ideally, the PM obtains a written final acceptance of the project verifying that the client acknowledges the substantial completion date and that the work and final record documents were delivered and accepted in accordance with the contract documents.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

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STATEMENT OF POLICY:

It is BBL/BBLES' policy to provide our clients with Operation, Maintenance, and Monitoring (OMM) services that comply with applicable regulations, are conducted safely, and performed efficiently. Moreover, it is our policy to seek out and exploit value-oriented solutions that provide cost savings, reduced liabilities, and other positive business outcomes for our clients.

1. Purpose of Procedure

The purpose of this procedure is to provide a common process for activities related to OMM services and to promote the consistent and efficient delivery of these services. BBL/BBLES (collectively referred to as the 'Firm') provides a wide variety of OMM services to clients across a broad geographical area. These services are managed and executed by various staff based on client team assignments, geographical placement, and skill sets.

Depending on the scope of services and the type of work to be performed, OMM services may be provided by either BBL or BBLES. In order to comply with licensing requirements and to maintain insurance coverage, it is imperative that OMM services be provided by the appropriate corporate entity. To avoid confusion or delay in the commencement of OMM activities, a determination as to which corporate entity will perform the work must be made as soon as possible; and in all circumstances prior to initiation of scope and contract negotiations. This determination shall be done in coordination with and subject to approval of the Legal division.

In general, BBL's scope of work will be limited to environmental monitoring activities in support of site characterization and/or post remediation monitoring. In contrast, BBLES is incorporated, qualified, licensed, and insured to provide not only monitoring services, but also other implementation-related activities such as remedial system startup, operation, and maintenance. Note that this OMM Quality Assurance Procedure (QP) applies to all BBL/BBLES projects regardless of the contracting company.

This OMM QP is not a stand-alone procedure and should be implemented in combination with all other applicable QPs. Other key QPs related to OMM include, but are not limited to:

- QP 2.01 – Project Planning and Review
- QP 3.05 – Documentation of Field Activities
- QP 3.06 – Sampling Activities
- QP 3.09 – Data Management

In addition to the above QPs, the Firm's Health and Safety Manual describes established health and safety procedures that must also be implemented in combination with this OMM QP.

2. Responsibilities

- A. Principal in Charge (PIC) – The PIC has overall responsibility for the client and is responsible for developing the overall project team. The PIC is responsible for coordinating with the OMM Attack Team to identify appropriate client programs or projects that may have an OMM component. In coordination with the Legal division, the PIC is also responsible for identifying the appropriate corporate entity (e.g., BBL or BBLES) prior to scope or contract negotiations with the client.
- B. OMM Attack Team – The OMM Attack Team is a BBL/BBLES resource team intended to support the client team with business development, strategic planning, and tactical deployment of OMM programs and projects.
- C. Program Manager – The Program Manager (if applicable) has responsibility for multiple OMM sites that

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are managed by individual Project Managers (see below). The Program Manager, in combination with the Project Managers, is responsible for implementing this QP.

- D. Project Manager – The responsibilities of the Project Manager include, but are not limited to, project planning, budget and scope development, schedule maintenance, quality assurance, health and safety, client communication, work product delivery, invoicing and collections, and overall coordination of project activities.
- E. Staff Engineers/Scientists – Staff Engineers/Scientists (if applicable) are responsible for the coordination of field activities and the management of OMM information. Staff Engineers/Scientists are also responsible for the preparation of project-related documentation for review and approval by the Project Manager. Staff Engineers/Scientists report directly to the Project Manager.
- F. Field Staff – The Field Staff has responsibility for the implementation of field-related OMM activities, including, but not limited to, sampling and monitoring, site inspection, system operation and maintenance, and documentation. The Field Staff receives direction from the Staff Engineer/Scientist or Project Manager.

PROCEDURE DESCRIPTION:

1. General Requirements

This OMM QP describes the implementation of an OMM program, incorporating value-oriented concepts focused on measurable endpoints. The objectives for an OMM program include:

- A. Basic OMM Services – provide basic OMM services by being fully compliant, and working safely and efficiently. These activities are mission-critical and are considered more of an expectation than an objective;
- B. Value – apply strategic business approaches to seek out solutions for our clients that save money, create potential revenue opportunities, reduce liability, and investigate potential exit strategies;
- C. Institutional Memory – leverage site-specific knowledge in combination with multi-site experience to establish a consistent management approach; and
- D. Best Practices – develop and refine business practices focused on “best-in-class” management and execution of OMM programs. Seek out and share lessons learned by others and apply this experience to achieve a positive business outcome for our clients.

This QP describes the common process that the Firm will use to address and manage typical OMM programs and meet OMM program objectives. The common processes embodied in this QP are applicable to all OMM programs, from a single site assignment to a large multi-site portfolio. The infrastructure and execution approaches outlined herein are readily adaptable and have the ability to grow and be flexible based on project and/or client needs.

2. Program Management and Execution

The management and execution of the OMM program involves a series of tasks that must be aligned with the overall

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goals and objectives. Key components that should be incorporated into an OMM program are outlined below.

A. Establish Metrics

As an initial task, programmatic and site-specific metrics will be jointly established by the client and BBL/BBLES. Specific metrics may account for compliance, performance, budget adherence, safety, client satisfaction, and/or other intangibles. These metrics will be used to measure performance and promote accountability.

B. Project Plan

The Project Manager will develop a project planning document for the project in accordance with QP 2.01. The project planning activities will establish global requirements that will be implemented throughout the program in combination with site-specific needs. Project planning will confirm established protocols for monitoring and reporting, as well as the health and safety, quality control, information management, and communication aspects of the OMM program. In addition, site-specific modules will be included for each site included in the OMM program that will address specific issues, such as monitoring frequencies, analytical protocols, and site logistics. Individual site modules can be modified, added, or eliminated, as necessary. Information can be obtained from the wide range of available project documents, including O&M Manuals, Sampling Plans, Quality Assurance Plans, and Health and Safety Plans.

Project planning should also address any transition planning where BBL/BBLES is assuming OMM responsibilities from others. This will include interfacing with current site operators and establishing a schedule for transition. Transition planning will also involve alignment of appropriate resources for each specific site, which, in some cases, may include the use of existing resources. Another important element of transition planning is continued dialogue between the client and BBL/BBLES related to potential exit strategies, which will be built upon as the OMM program advances (discussed further below).

C. Kickoff Meeting

At the initiation of the OMM program, a kickoff meeting/teleconference will be conducted with all project personnel. The meeting will be conducted under the leadership of the Project Manager and will follow a predetermined agenda. The BBL/BBLES Health and Safety Plan, project-specific communication needs, and project planning activities (e.g., schedules, scopes of work, budgets) will be reviewed and put into action at this meeting.

D. Initial Site Review and Strategic Planning

Following the kickoff meeting, the Project Manager (or his/her delegate) will conduct an initial review and evaluation of the site(s). Principal objectives of this activity will include confirmation of OMM requirements, as well as identification and evaluation of short- and long-term strategies for each site, as appropriate. These include:

- Reviewing and inventorying site documentation;
- Evaluating technical operating practices;

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- Reviewing lessons learned from previous site operators;
- Evaluating the current operating system (if applicable) to determine the effectiveness of current operations and to identify potential optimization alternatives;
- Developing life-cycle cost estimates, based on current site conditions and including an estimate of system operation time, tasks to be completed prior to system decommissioning, and a cost estimate for system shutdown/site closure and site restoration (if applicable);
- Identifying possible system/process improvements that will lower operating costs and still maintain system integrity; and
- Developing recommendations to lower life-cycle costs.

The review and evaluation process will be managed by the Project Manager and staffed with the technical personnel qualified to address the specific issues identified at each site. Results of the review and evaluation will be documented and provided to the PIC and/or other BBL/BBLES staff designated by the PIC (e.g., OMM Attack Team representative).

Upon the completion of the review and evaluation process, a meeting/teleconference will be convened to discuss the findings, to explore alternate ideas and approaches, and to establish short- and long-term goals for each site. Necessary adjustments to the project planning activities will be made at this time.

E. Execution of Routine OMM Field Tasks

As part of routine OMM field tasks, BBL/BBLES will:

- Develop formal OMM plans for project team (and client) personnel;
- Implement appropriate health and safety practices;
- Maintain full compliance with permits, applicable regulations, and regulatory orders;
- Perform routine OMM tasks, including preventive maintenance, equipment replacement (BBLES only), site inspections, and system performance monitoring;
- Complete routine environmental monitoring and sampling; and
- Inspect and maintain site security features.

It should be noted that the Firm embraces the use of new technologies that may improve the execution of project-related tasks, increase efficiency, and reduce costs. This philosophy extends to the execution of field work, including the use of state-of-the-art sampling and monitoring equipment and data collection devices.

F. OMM Reporting

At the direction of the Project Manager, OMM project staff will identify project-specific OMM reporting

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requirements and will develop an OMM reporting schedule and format in combination with information management tools (discussed below). This OMM reporting format will facilitate the transfer of data from field activities into a project database that will then generate standardized reports within the specified schedule. In addition, reporting tools will be designed to accommodate electronic deliverables from analytical laboratories assigned to the OMM program.

3. Other OMM Attributes

Beyond the general requirements and the program management and execution tasks outlined above, other program attributes should be rolled up in an OMM program, as appropriate.

A. Health and Safety

The health and safety aspect of any project is of paramount importance to our workers, our clients, and the surrounding community, as well to as our business. It is with this principle in mind that health and safety procedures **must** be implemented for **all** OMM-related activities. A detailed health and safety plan will be prepared prior to commencing any field-related activity at the site. A job safety analysis should also be performed by appropriate personnel (to be determined by Project Manager) prior to commencing OMM work to allow BBL/BBLs to properly identify and scope the required level of effort necessary to perform all site activities in a safe manner. The Firm's corporate health and safety officer should be involved in the development of this plan and have final signatory responsibilities on its implementation.

Detailed health and safety procedures are outlined in the Firm's Health and Safety Manual, which is an integral element of this QP.

B. Data Collection and Management

The management and collection of site and system data is an important component of each OMM program. The key to successful data collection and management is the development of a systematic, standard, and consistent method in which data are collected and analyzed in "real time" or later on.

The OMM project team will meet prior to working on the site to determine the overall site goals and to review the data collection and management procedures. The Project Manager will predetermine what level of monitoring is required, and, specifically, what data will be required to properly measure metrics and gauge whether the site goals are being achieved. Typically, standardized data collection sheets are developed for use by the OMM project team for use by all who visit and monitor the site. Data collection sheets must be clear and easy to understand. Data collection devices such as handheld computers or other digital devices may be used to simplify and optimize the data collection process.

Data processing, analysis, and management are also key elements for this procedure. It is vital that adequate procedures defining the method of handling the data are provided prior to implementation. The data management process can be handled using established, commercially available database/spreadsheet packages (Microsoft Access/Excel, SQL Server, Active Project, Site Manager Pro, and GTGS) or internal data management (i.e., Internet Compliance Environment [ICE]) tools developed specifically for the collection and management of environmental data (i.e., oriented toward compliance, reporting, schedule, metrics, and overall site goals). The Firm's Corporate Information Technology (CIT) support staff has developed internal and external tools to support this aspect of the OMM QP. Dedicated web-based systems are currently in use to store, retrieve, and manage information on OMM sites. A specific interface should be developed based on project needs and the level of support requested by the client.

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C. Financial Management

Another aspect of a successful OMM program is helping the client to get its site operations to a point where system OMM time and effort are spent efficiently; enabling the client to achieve endpoint goals in a more cost-effective manner. To do this, an annual OMM cost will be estimated by the Project Manager (or his/her delegate) for each site for the life of the project. Life-cycle costs are calculated using standard economic analyses based on return period and compound interest factors. The life-cycle cost provides a baseline against which future investments, business decisions, program savings, and incentives can be calculated.

A cost-tracking system that itemizes and captures discrete costs (e.g., labor, energy consumption, consumables, treatment media, analytical, non-routine maintenance, and other relevant categories) is required. This database is an indispensable management tool when used to track relative costs and identify discrepancies. Additionally, these data can signal that disproportionate amounts of money are being spent; these areas can then be targeted for future cost reduction. The financial tracking should be built into the information management scheme developed for the OMM program.

D. Resources

The Firm maintains a nationwide network of field personnel who perform OMM activities and provide field support for other environmental programs. Each project OMM project team should be developed with this resource in mind, and a primary OMM technician should be assigned to the site(s) in the particular area to be serviced. A secondary (backup) individual should also be identified and cross-trained to provide consistency and complete OMM coverage. Project OMM field personnel must be OSHA-trained and participate in the Firm's medical monitoring program.

Where appropriate, BBL/BBLES may also elect to use subcontracted resources to provide OMM support for client sites. On these sites, data analysis, compilation, and management is performed by BBL/BBLES personnel utilizing the tools listed above; however, it is necessary to use a systematic approach to identify the program resources best suited for the overall OMM program needs.

The Project Manager must also identify any client-specific training that may be required, and verify that all applicable project resources (BBL/BBLES or otherwise) comply, as necessary.

Other BBL/BBLES technical resources should be utilized on an "as-needed" basis to analyze data collection and analysis activities, equipment operation and maintenance issues, performance metrics and goals, and the technical complexities associated with the site. These could include process, civil, electrical, or mechanical engineers; hydrogeologists; scientists; information management specialists; and other professionals.

E. Process Improvements and Exit Strategy

Client expectations for a successful OMM program generally indicate that it is necessary to control OMM costs and, where possible, drive them downward without compromising the integrity of the OMM system or its goals. Seeking out and exploiting process improvements that save money for our clients must be an ongoing focus for any OMM program. Process improvement can be achieved using several tactics, including the following:

- Efficiency – Review what is being done and who is doing it; consider more efficient ways of getting the same job done at lesser cost. *Example: Reschedule OMM tasks at multiple sites to coincide with*

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one another – create “milk runs.”

- Approach – Examine how an OMM task is being performed and consider a different approach. *Example: Evaluate environmental monitoring programs, and adjust the analytical parameters and/or monitoring frequencies downward, based on statistical analysis.*
- Process – Evaluate process equipment or hardware being used for an OMM task and identify less expensive technologies. *Example: Replace existing, conventional treatment components with lower-energy, passive-type treatment technologies.*

Another key issue related to cost control is the vigilant pursuit of an effective exit strategy, where appropriate. Environmental monitoring and/or remedial systems are generally installed to provide resource management and/or remedial control. These measures represent ongoing costs with no appreciable returns. Generally, it is in our client’s best financial interests to reduce or eliminate these costs through the development and implementation of a long-term exit strategy that culminates with the termination of all or part of the OMM program. The point here is that the best cost savings strategy for our clients is to eliminate all or part of the remedial operation, and we should remain focused on this endpoint.

- END OF PROCEDURE -

Executive
Authorization: _____ **Date:** _____

BBL	TOPIC: DETERMINATION OF DATA QUALITY OBJECTIVES AND DEVELOPMENT OF QUALITY ASSURANCE PROJECT PLANS QP 3.12	
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STATEMENT OF POLICY

It is BBL's policy that data quality objectives are determined for data collection activities in conformance with client requirements and that quality assurance project plans (QAPPs) be prepared in conformance with applicable federal and state regulations and guidance.

Purpose

This procedure provides the common process for establishing data quality objectives and for developing, approving, and implementing project-specific QAPPs.

Responsibility

Principal in Charge (PIC) – The PIC (or designated coordinating program managers authorized by the PIC) is accountable for all project documents and for verifying that the project manager is fulfilling the responsibilities identified in this procedure.

Project Manager (PM) – The PM is responsible for implementation of this procedure, including verification that project-specific planning requirements are followed.

Project Team Members – Project team members are responsible for meeting the requirements of this procedure.

Data Services Group – Members of the Data Services Group assist the project team in developing data quality objectives and the QAPPs.

Definitions

Data Quality Objectives (DQOs) – Statements that reflect the study objectives, define the appropriate type of data to be collected, and specify tolerable levels of potential decision errors. These statements are used as the basis for establishing the quality and quantity of data needed to support decisions to be made based on the data.

Decision Error – There are two types of decision errors: false rejection of a hypothesis (Type I error) and false acceptance of a hypothesis (Type II error). In one example of determining whether a truckload of waste is contaminated to the point that it requires disposal in a RCRA-approved hazardous waste landfill, the hypothesis is that the waste is hazardous. If the available data indicates that the waste is not hazardous and the truckload of waste is sent to a sanitary landfill when, in fact, the waste is hazardous, a Type I error has occurred (i.e., the hypothesis that the waste is hazardous is rejected when, in fact, the waste is hazardous). If, based on the data, non-hazardous waste is sent to a hazardous waste landfill, a Type II error has occurred (i.e., the hypothesis that the waste is hazardous is accepted when, in fact, the waste is not hazardous). The errors in this example were made because the data did not accurately represent the waste. The tolerable limits of the probability of decision errors are determined during the DQO process.

Decision Rule – An "if... then..." statement that defines the conditions that would cause a decision maker to choose among alternative courses of action.

Quality Assurance Project Plan (QAPP) – A document describing the necessary quality assurance, quality control, or other technical activities that must be implemented so that the results of the work performed will satisfy

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the stated performance criteria.

Quality Assurance/Quality Control (QA/QC) – A system of planned activities implemented to provide confidence that the data is of an expected type and quality, and the associated operational techniques and activities used to fulfill these requirements.

DESCRIPTION OF PROCEDURE

1.0 Planning

Work involving generating, acquiring, and using environmental data is planned and documented. The type and quantity of data needed is established using a systematic planning process. The required data quality objectives are developed through communication between the client, the associated regulatory agencies (if appropriate), and the project team. This communication serves to:

- identify the client's needs and expectations;
- identify the technical and quality goals the meet the client's needs and expectations;
- translate the technical and quality goals into activities that will produce the desired results;
- consider cost and schedule constraints with which project activities are to be performed; and
- identify acceptance criteria for the data and/or measures of performance by which it will be evaluated.

The DQOs are established prior to commencing data collection activities. These DQOs are documented and communicated to the project team by their inclusion in work plans, QAPPs, or other appropriate project documentation, as described in Section 2 below. One example application of the DQO process is presented at the end of this procedure.

If the PM determines, during the project planning and review process (QP 2.01), that a project-specific QAPP is required, the QAPP is prepared as outlined in Section 4 of this procedure. The PM is responsible for obtaining the QAPP, with all required approvals, prior to commencing data collection activities.

2.0 Development of Data Quality Objectives (DQOs)

DQOs are qualitative and quantitative statements that:

- reflect study objectives;
- define the appropriate type of data; and
- specify tolerable levels of potential decision errors.

DQOs are used as the basis for establishing the quality and quantity of data needed to support project decisions. DQOs define the performance criteria that limit the probability of the project team making "decision errors" by considering the items previously listed in this section.

DQOs answer the following basic questions:

1. What are we doing (what data are we collecting)?
2. Why are we doing it (why are we collecting the data)?
3. What are we going to do with the data?
4. What quality requirements apply to the data?

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The level of effort expended in establishing DQOs should be commensurate with the level of complexity of the data being collected/generated (e.g., DQOs for monthly discharge sampling for NPDES compliance for one parameter may be adequately addressed in one paragraph in a work plan, while DQOs for a multiphase, mixed matrix remedial investigation may extend to many pages in a fully developed QAPP). Appropriately developed DQOs provide the data to make project-related decisions within a reasonable uncertainty and minimize the collection of unnecessary or extraneous data.

DQOs are developed by the project team following a seven-step process:

Step 1: State the Problem

In this step, the planning team members and decision makers are identified and a concise description and conceptual model of the environmental problem to be solved or questions to be answered are developed. Available resources are evaluated and constraints are identified.

Step 2: Identify the Decision

In this step, the project team defines project goals and objectives. In addition, the project team identifies the questions to be answered and decisions to be made using the data that are being collected.

Step 3: Identify the Data Needed for the Decision

In this step, the project team determines the kinds of information needed to make project decisions and identifies sources of information. The project team also identifies sampling and analysis methods to be used to meet data requirements.

Step 4: Define the Boundaries of the Study

In this step, the project team defines the spatial boundaries of the study area and identifies sampling areas. The project team also establishes the time frame in which the samples will be collected and identifies practical constraints (e.g., time, staff, resources, physical barriers, access).

Step 5: Develop a Decision Rule

In this step, the project team determines the parameter(s) that best summarizes the critical characteristic(s) or feature(s) of the site. This parameter may be defined in terms of an action level(s) or associated with a regulatory requirement (e.g., total mass, daily average or total concentration). In this step, the project team also establishes what action or additional evaluation is needed and at which level this action or additional evaluation is taken. This step combines the results of Steps 2 and 3. Examples of decision rules may include: excavation continues until the verification sample results are less than the removal action limit, or if the concentration of contaminants in the river exceed the ecological screening level, then the site warrants further evaluation. The number of decision rules is dictated by the complexity of the site.

Step 6: Specify Tolerable Limits on Decision Errors

In this step, the project team determines the possible sources of error and establishes an anticipated range of values for the parameters of interest. The project team defines potential decision errors, evaluates the

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consequences of making a decision error, and considers methods to manage the error. For example, if trying to determine whether a "hot spot" is present within a study area, a grid-pattern sampling effort may be planned. The grid spacing and the anticipated diameter of the hotspot can be used to calculate the probability of "missing" the hotspot during sampling (Type I error, rejecting the presence when true). The grid size can be made smaller to minimize this error, but at an associated increase of time and expense. A decision is made as to what level of error is tolerable based on the consequences of making a decision error (balanced with the costs associated with reducing the error probability in Step 7).

Step 7: Optimize the Design for Obtaining Data

In this step, the project team determines the quantity of data needed and the most resource-effective data collection design. The outputs from the previous DQO steps are used to determine the quantity and type of data to be collected, the analyses to be performed, and the hypotheses to be tested. The project team evaluates and optimizes data collection design alternatives to meet the DQOs and allow decisions to be made within tolerable error limits.

Once the DQOs are established, they are documented and communicated to the project team through the most appropriate vehicle for the project (e.g., work plan, QAPP, memorandum).

Information relating to the development of DQOs can be found in the United States Environmental Protection Agency (USEPA) documents *Guidance for the Data Quality Objectives Process* (EPA QA/G-4) and *Data Quality Objective Process for Hazardous Waste Site Investigations* (EPA QA/G-4HW). Links to these documents can be found on the corporate Intranet.

3. QAPP Preparation

All QAPPs follow the BBL standard format, unless the client or applicable regulatory program requires an alternate format. BBL standard format QAPPs may be drafted by project staff, by Data Services Group members, or by project staff in conjunction with the Data Services Group. Nonstandard QAPPs should be drafted by, or under the guidance of, Data Services Group members.

All QAPPs discuss the following elements:

- Project Management and Project Objectives;
- Data Acquisition and Measurement System Requirements;
- Assessment and Oversight Requirements; and
- Data Evaluation and Data Usability Determination.

The BBL standard QAPP format is consistent with USEPA requirements for QAPPs (EPA QA/R-5) and was developed in accordance with the USEPA guidance for QAPPs (EPA QA/G-5). Modifications to the format may be necessary to comply with appropriate state, region, or specific regulatory program requirements. The guidance used to develop the QAPP is specified within the document.

Links to the USEPA guidance documents and several state, regional, and regulatory program documents can be found on the corporate Intranet. Not all guidance documents are, however, currently available on the Internet. Consult with a member of the Data Services Group prior to initiating a new QAPP to determine the most appropriate guidance.

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4. Field Sampling Plans and Site-Specific Standard Operating Procedures

As required under current USEPA guidance, the BBL standard QAPP format allows for incorporating sampling procedures and field activities, and appending field standard operating procedures. Project-specific requirements may, however, dictate that a separate field sampling plan (FSP) be generated for the site. When a separate FSP is required, care must be taken to verify that the information provided in the FSP is consistent with that presented in the QAPP. Details regarding the requirements for FSPs can be found in QP 3.04.

5. QAPP Approval

As outlined in QP 3.01 (Technical Document Process), all QAPPs that control activities of BBL personnel and subcontractors are reviewed and approved by the PIC, the PM, a senior member of the Data Services Group, and the Corporate Quality Manager/Officer. Certain projects and programs may require the approval of additional individuals as required by the project plan or as specified in a Consent Order or Unilateral Administrative Order. The PM is responsible for obtaining all required approvals which must be documented on a fully executed approval page at the beginning of the QAPP.

6. QAPP Review and Amendment

All project QAPPs are reviewed and revised, if necessary, to accommodate changes and/or additional work at the site (e.g., project modifications that alter the study objectives or that introduce a new type of data collection activity). Whenever the plan must be modified, the changes are made as an amendment to the QAPP. The original text is not deleted, but can be lined through to indicate that it is no longer applicable.

If the changes are extensive or if the scope of the project is altered significantly, changes to the QAPP are made by issuing a revised document. The original document remains on file intact and unchanged. The new document is issued as a revision to the original document, with a new revision number. The revised QAPP indicates the phase of the project that the revision corresponds to, through text within the document and/or through an attached submittal letter. The revision obtains the same approvals required for the original document.

7. Filing QAPPs

A fully executed copy of each project QAPP is retained in the project file. Additional document management requirements comply with QP 1.02 (available on the corporate Intranet).

RELATED DOCUMENTS

QP 1.02	Document and Record Management
QP 2.01	Project Planning
QP 2.05	Client Quality Planning
QP 3.01	Technical Documents Process
QP 3.04	Requirements for Field Sampling Plans
QP 3.09	Data Management

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DQO APPLICATION EXAMPLE

Determining the Source of Contamination for an Unconfined Aquifer

Step 1: State the Problem

A landfill is the suspected source of PCE contamination in an aquifer serving as a drinking-water source for nearby residents. Low-level contamination has, however, also been found in a well upgradient of the landfill. There was once a dry cleaning facility with a leaking tank, which is upgradient of both the upgradient well and the landfill. The source of the aquifer contamination needs to be determined. BBL has been retained by the landfill owner. The project team includes a PM, a hydrogeologist, a chemist, a statistician, and a field sampling team.

Step 2: Identify the Decision

A decision needs to be made whether the downgradient (of the landfill) well shows levels of PCE "significantly greater" than that seen in the upgradient well.

Step 3: Identify the Data needed for the Decision

Data on the PCE concentrations in groundwater are needed from at least one upgradient location and one downgradient location near the landfill. Historical data are available and have been reviewed. Based on trend analysis, the PM is concerned that the upgradient concentration of PCE contamination may have changed since the last sampling event; therefore, additional groundwater sampling is planned. It does not appear that any other essential data are missing.

Step 4: Define the Boundaries of the Study

The study will focus on groundwater within the unconfined aquifer that is upgradient, downgradient, and beneath the landfill. Accordingly, samples will be collected from monitoring wells determined to represent groundwater from these locations.

Step 5: Develop a Decision Rule

If the downgradient wells yield PCE values significantly greater than the upgradient wells, then the landfill is contributing to the contamination of the aquifer and further assessment or action is required.

Step 6: Specify Tolerable Limits on Decision Errors

A Type I error for the site would be if the decision was made that the downgradient well was more contaminated than the upgradient well, when it indeed is not. A consequence of this error could be the needless cost of capping the landfill (or other action at the landfill) when it is not a source of contamination. A Type II error would be made if the decision is made that the two aquifers are similar, when indeed the downgradient is more contaminated. The consequences of this error could be continued contamination of the aquifer. Based on discussion with the client and project team, the PM determines the numerical probability limits for these decision errors.

Step 7: Optimize the Sampling Design for Obtaining Data

Incorporating the results of the previous steps, the sampling design is defined/optimized, including the identification of the wells to be sampled, the number of samples to be collected, the sampling frequency (e.g., quarterly), and the methods for collecting and analyzing the samples.

- END OF PROCEDURE -

**Chief Executive Officer
Authorization:** _____

Date: _____

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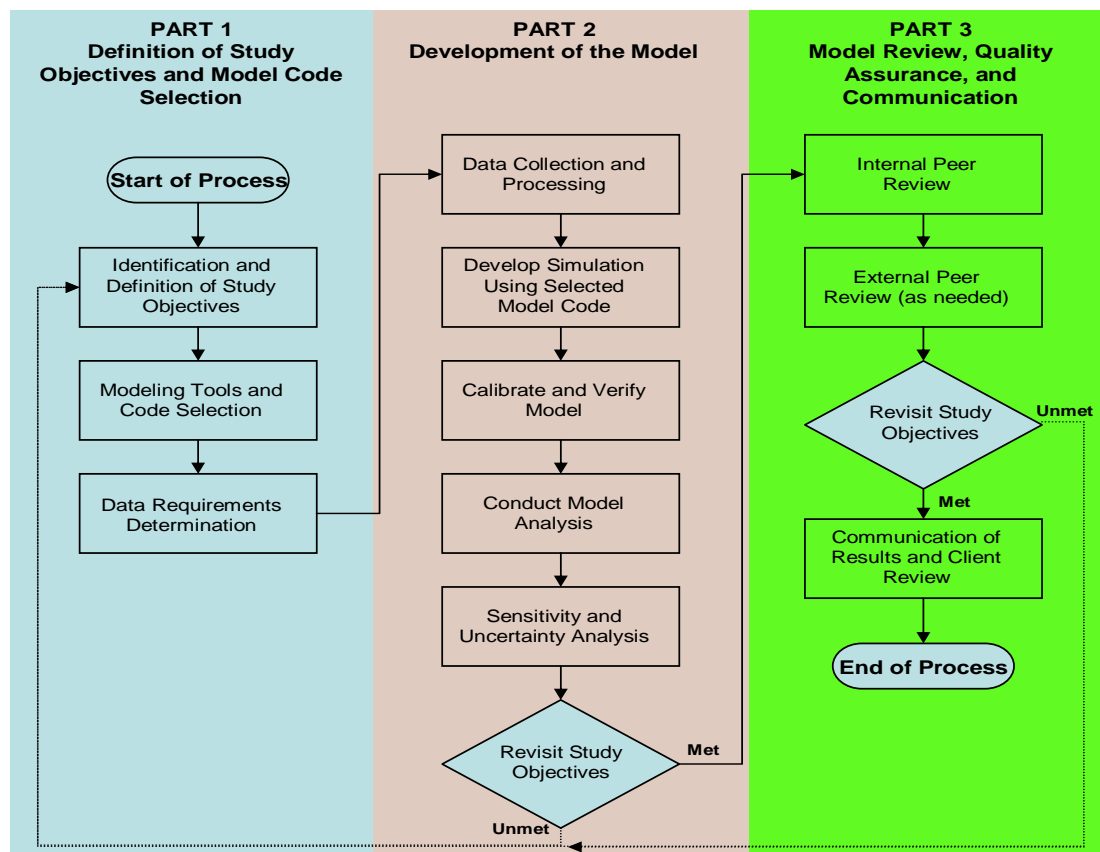
STATEMENT OF POLICY:

It is BBL's policy to develop useful and defensible quantitative models using commercially available and widely accepted modeling tools. These models are used as management and decision-making tools in all of the fields of practice in which BBL performs numerical or quantitative modeling.

Purpose

The purpose of this quality procedure (QP) is to provide a common process for selecting and applying modeling tools; selection is based on several factors such as the study objectives, available time, budget, and level of accuracy required. This QP is intended to apply to those fields of practice in which modeling is conducted by BBL, including hydrology, hydrogeology, surface-water quality, sediment and contaminant transport, economics, risk assessment, and statistical modeling, among others. This procedure is not intended to address modeling tool development, such as new computer code (software) or new algorithms, but rather the application of existing and accepted modeling tools.

The following decision-making flow chart presents the steps and decision-making points defined in the procedure. Each of these steps is presented in detail in the description section of this QP.



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Responsibility

Project Manager (PM) – The PM is responsible for defining the objectives and scope of modeling activities, assigning a qualified modeler or modelers, and assigning peer reviewers.

Modeler – The modeler is responsible for performing the modeling tasks assigned by the PM, such as selecting the modeling tool, developing the model, and providing peer review. The PM provides permission for any delegation of tasks. The modeler maintains up-to-date and complete files, and records of modeling activities such that model development is transparent and repeatable by others in the future. The modeler is responsible for clearly communicating to the PM any uncertainties that may change conclusions.

Definitions

Model Code (or Modeling Tools) – The set of instructions (i.e., specific computer commands or mathematical tasks) that are used to perform the calculations required to simulate a desired process or scenario. A model of a site or situation is developed using a particular model code. The compiled model code may also be referred to as a “computer program.” For this QP, model code refers to both compiled and uncompiled computer code, as well as model algorithms that may be set up in spreadsheets or other software.

Model – A working simulation of a site or situation produced by assigning necessary input parameters to the model code. A “model” is considered developed when the code is known to be working properly, and reasonable, defensible model inputs have been specified to produce results consistent with known, expected, or acceptable behavior. A model refers to the site-specific or situation-specific application of a model code.

Model Calibration – The process of evaluating model usability and reliability in comparison to empirical measurements (calibration targets) or well-established solutions to sets of test data.

Model Verification – The process of checking a model that has been calibrated to a set of empirical measurements (calibration targets) with a separate set of empirical measurements to verify the model predictions are acceptable. The need for model verification is based on the study objectives and the results of the model. In this QP, verification is used in conjunction with model calibration in referring to the process of evaluating model usability and reliability. Note that verification of a correctly operating model code is assumed to have been conducted prior to selecting a given modeling code.

Prediction – The results obtained from a model for a specific input scenario.

Sensitivity – The quantitative assessment of variation in a model’s predictions in response to variation of select input parameters. These input parameters are typically varied within reasonable ranges and the model results are compared and contrasted to evaluate the effect that a change in a given parameter has on the model calculation(s). The need for the type and level of model sensitivity analysis is based on the study objectives and the model results. Sensitivity can indicate uncertainty of model predictions and the reliability of model results with the study objectives.

Uncertainty – Assessing the potential variability and bias of a model’s prediction based on such factors as:

- known processes not accounted for in the modeling framework;
- bias in the calibration;
- variability in model results due to inexact determination of inputs (including calibration parameters and forcing functions); and
- type of model selected for simulation (such as a Monte-Carlo simulation).

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The need for the type and level of model uncertainty analysis is based on the study objectives and the model results.

Model Documentation and Record Retention

Thorough documentation of modeling activities and retention of modeling files is very important in providing transparency of the process, defensibility of results, and acceptability to reviewers who may try to reproduce model results. Modeling activities can generate large hard copy and electronic files, especially in sequential calibration steps. Documenting and archiving calibrated models and results is a key step, as is documenting any deviations or modifications to published model codes. Equally important is documenting the rationale for model input selection.

The following actions are performed to document modeling activities:

- Use consistent forms (log files) to identify the appropriate inputs and outputs for each model code simulation. The log files contain information such as date and computer file name as well as additional information appropriate for the simulation.
- Maintain final model code electronic files on taped back-up drives, as well as CD/DVD.
- Document algorithms used in model code (either through User's Manuals or published papers available in literature).
- Develop appropriate level of documentation to be able to access files as needed.
- Refer to BBL QP 1.02 regarding document and record management, available on the corporate Intranet.

DESCRIPTION OF PROCEDURE:

This QP describes the process that a PM and modeler follow to develop a useful and defensible quantitative model. It includes identifying the study objectives that the modeling framework addresses, selecting the appropriate model code to answer the study objectives, developing the model, and internal and external review.

PART 1 – Definition of Study Objectives and Model Code Selection

1. Identification and Definition of Study Objectives

- clearly state study objectives (e.g., model will be used as a diagnostic tool to evaluate the processes and response of a system or as a predictive tool to simulate the future response of a system);
- formulate specific questions to be addressed by model; and
- verify the objectives with the client.

2. Modeling Tools and Code Selection

- Select the most appropriate modeling code based on:
 - selected modeling code(s)' ability to provide the required information in a professionally defensible matter;
 - professional judgment and available published standards in the respective field;
 - level of accuracy required to answer study questions; and
 - available budget and time requirements.

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- Use professionally accepted model codes where available.
- Modeler has technical expertise to develop and analyze the results of the modeling code(s).
- Document the rationale for selecting the modeling code(s).
- Document version number of modeling code and tools used in analysis.

3. Data Requirements Determination

- Identify the information required to use the selected modeling code(s).
- Identify sources to obtain the data needed for model development and calibration:
 - exploit publicly available (government) sources of data when possible; and
 - develop work plans to obtain original data to be collected for use in the model, unless such data collection is covered under existing work plans.

PART 2 – Development of the Model

1. Data Collection and Processing

- Computerize and verify raw data.
- Evaluate the quality and utility of the data collected for input into model code.
- Format data for input into the model code (this may include calculating necessary model code input parameters from the raw data).
- Identify unusable data and document the lack of utility of the data.
- Refer to BBL QP 3.09 regarding data management, available on the corporate Intranet.

2. Develop Simulation Using Selected Model Code

- Construct project-specific model using selected modeling code and available input parameters.
- Set model parameters within reasonable ranges based on the available data or professional judgment when site-specific data are lacking.
- Confirm that model input/output processes are operating appropriately.

3. Calibrate and Verify Model

- Calibrate to the level necessary to be consistent with the modeling objectives.
- Verify calibration with second set of results, where available (optional, depending on model results and study objectives).
- Establish reasonable calibration ranges to compare model and measured results.

4. Conduct Model Analysis

- Use calibrated and/or verified model for analysis.
- Identify the degree of accuracy of analysis based on application (routine events have higher degree of accuracy, as the models have typically been calibrated and verified to those events; extreme events have lower degrees of accuracy so the results must be interpreted as such).
- Use appropriate post-processing tools, where applicable, to evaluate the results of the analysis.
- Document version number of modeling code and tools used in analysis.

5. Sensitivity and Uncertainty Analysis

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- Conduct sensitivity and uncertainty analyses consistent with the study objectives.
- Vary key input parameters within reasonable ranges (consistent with the available data and/or professional judgment).
- Compare model results from these variations to evaluate model sensitivity to these input parameters.
- Compare model results with factors such as known processes not accounted for in the modeling framework, bias in the calibration, variability in model results due to inexact determination of inputs, and type of model selected for simulation.
- Document areas of uncertainty from these comparisons and their potential influence on the results of the model.

6. Revisit Study Objectives

- Compare results of analysis with the study objectives to determine if the model meets the study objectives.
- Determine if the model results:
 - answer the study questions with sufficient accuracy;
 - require additional modeling steps to improve results consistent with the study questions; or
 - require additional data collection to address any key data gaps necessary to improve the model results.
- Repeat steps in Parts 1 and 2, as required, if model results are not consistent with the study objectives.

PART 3 – Model Review/Quality Assurance/Communication

1. Internal Peer Review

- Identify individual technically competent to review and comment on the appropriateness, accuracy, and validity of the model and its application.
- Document the results of the peer review.

2. External Peer Review (as needed)

- Identify the need for external peer review for defensibility (if required by the study objectives).
- Review site-specific project requirements with the client, PM, and BBL's internal legal counsel with respect to confidentiality issues.
- Identify external individuals technically competent to review and comment on the validity of the model and its application.
- Document the results of the external peer review.

3. Revisit Study Objectives

- Determine if model results are consistent with the study objectives based on the results of the internal or external (if required) peer review(s).
- Determine if the model results:
 - answer the study questions with sufficient accuracy;
 - require additional modeling steps to improve results consistent with the study questions; or
 - require additional data collection to address any key data gaps necessary to improve the model results.
- Repeat steps in Parts 1 and 2, as required, if model results are not consistent with the study objectives.

4. Communication of Results and Client Review

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- Restate the study questions and what information the model provides to address these questions.
- State the reliability of the results with the study objectives.
- Formulate the presentation of results for a lay person, allowing a client or reviewer to clearly see the strength and credibility of the findings.
- Clearly state the uncertainty of the findings as well as the potential implications of the uncertainty on the findings.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	TOPIC: REQUIREMENTS FOR STANDARD OPERATING PROCEDURES		QP 3.14
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STATEMENT OF POLICY:

It is BBL's policy to develop standard operating procedures (SOPs) that are technically sound, detailed (usually in a step-by-step presentation), and in compliance with applicable regulatory, legal, and contractual requirements. SOPs are prepared using the standard BBL format, and require the approval of a technical expert and the Project Manager.

Purpose

The objective of this quality procedure (QP) is to provide a common process for developing and approving SOPs.

Responsibility

Principal in Charge (PIC) – The PIC is accountable for the use of this QP for client activities. When necessary, the PIC provides guidance for appropriately applying the requirements of this QP.

Project Manager (PM) – The PM is responsible for the implementation of this QP.

Technical Expert – Firm-recognized experts on a technical process/procedure are responsible for reviewing and approving SOPs.

Project Personnel – Project personnel involved in SOP development and modification are responsible for complying with this QP.

Definitions

Standard Operating Procedure (SOP) – A non-project-specific document that describes the protocol for safe implementation of a specific task to facilitate consistent conformance to technical and quality requirements that support data quality.

Field Sampling Plan (FSP) or Sampling and Analysis Plan (SAP) – A project- or site-specific document that identifies the scope of work, describes the data quality objectives (e.g., frequency of samples, sample strategies, quality assurance activities, and data end use), and identifies or includes SOPs. An FSP or SAP may be incorporated into a quality assurance project plan (QAPP; i.e., per agency requirements), incorporated into a work plan, or be prepared as a stand-alone document depending on project scope and the lead agency.

Health & Safety Plan (HASP) – A project- and site-specific document that identifies potential hazards regarding health and safety, and prescribes control measures.

Data Quality Objective (DQO) – Statements that clarify project objectives, define data type(s), and establish quality and quantity of data needed to support data end use and decisions. Typically, DQOs are identified in a QAPP, FSP, or SAP.

Quality Assurance Project Plan (QAPP) – A document that describes in comprehensive detail the necessary quality assurance, quality control, or other technical activities that must be implemented such that the results of the work performed will satisfy the stated performance criteria or DQOs.

Work Plan – A project-specific document that identifies all components to be implemented for the project. Generally, the work plan includes SOPs, FSP or SAP, HASP, and QAPP.

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DESCRIPTION OF PROCEDURE:

1. Requirement for an SOP

A Standard Operating Procedure (SOP) describes in detail the step-by-step instructions for implementing a task. The SOP will be consistent with applicable state, federal, or local regulations. SOPs can be developed to comply with specific state and/or federal regulations, but are not intended to be site-specific documents.

2. Preparing SOPs

SOPs follow the standard format identified in the SOP Standard Template available on the corporate Intranet and can be downloaded into the BBL and BBLES templates in MS-Word. Formatted outlines of several SOPs are also available on the corporate Intranet. The content for each section in the SOP standard format is described below. Periodically, a section may not be applicable and should be clearly noted in the SOP, as such.

- I. Scope and Application – Describes the purpose, applicability, objective, and potential uses (or limitations) of the data generated upon completion of the SOP (e.g., This SOP describes the process to collect groundwater samples from monitoring wells. The data will be used to evaluate groundwater quality).
- II. Personnel Qualifications – Identifies the minimum level of experience and/or education/training required to perform, oversee, or direct an activity.
- III. Equipment List – Comprehensive list of equipment needed to perform this task. Avoid identifying brand name or specific manufacturers, if possible.
- IV. Cautions – Indicates actions that could result in equipment damage or degradation of samples, what can go wrong while implementing the SOP, and how to avoid problems. (e.g., “Do not use coated bentonite pellets, the coating is a possible source of contamination.” or “Maintain sample containers out of direct sun light.” or “Do not overfill sample containers that are prepared by laboratory with preservative.”)
- V. Health and Safety Considerations – Indicates operations that could result in injury if the SOP is not implemented correctly.
- VI. Procedure – Describes in detail the pertinent steps of the operational process to be followed in order from start to finish. The SOP may reference other SOPs such as sample handling, packaging and shipping, equipment decontamination, or equipment calibration. It is recommended that references to other BBL SOPs be done by SOP name rather than appendix number.
- VII. Waste Management – Describes how investigation-derived wastes and/or disposable equipment are stored, labeled, and managed before disposal, and identifies potential disposal options, if needed. Client and/or site-specific waste management processes should be included in the FSP or work plan.
- VIII. Data Recording and Management – Describes the type of information to record in the field and methods to document the results, in accordance with QP 3.05 – Documentation of Field Activities (available on the corporate Intranet.)
- IX. Quality Assurance – Identifies whether the data are to be considered screening or definitive measurements, and identifies SOP-specific quality assurance procedures, if any (e.g., obtain specifications and/or Material Safety Data Sheets for well construction materials from subcontractor prior to mobilization, or do not sample groundwater during precipitation event unless a cover is erected over sampling area).

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- X. References – List the references used to develop the SOP (e.g., ASTM, USGS, state or federal guidance documents, or other published literature.) Attach references that are not readily available.

3. Review and Approval

SOPs follow the process described in QP 3.01 – Technical Document Process, available on the corporate Intranet. SOPs are reviewed and approved by a technical expert and the PM, as noted on the approval page placed at the beginning of each SOP. Additional approvals that are required are placed on the approval page.

4. Implementation

SOPs are implemented by and/or under the supervision of qualified individuals on the basis of education, training, and/or experience, as determined by the PM. Deviations from an SOP must be appropriately documented into project notes, approved by the PM, and communicated to all required parties (i.e., client, agency). Consideration is given to update corresponding QAPPs, FSPs, work plans, or project-specific SOP modules to document changes or modifications, as necessary.

5. Record Management

Finalized SOPs (including revisions, modifications, or updates) will be retained in accordance with QP 1.02 – Document and Record Management (available on the corporate Intranet.) The technical expert associated with each approved SOP is identified as a contact for future use by others.

- END OF PROCEDURE -

Chief Executive Officer
Authorization: _____

Date: _____

BBL	TOPIC:		CONSTRUCTION ADMINISTRATION	QP 3.16
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STATEMENT OF POLICY:

It is BBL's policy that construction administration activities provide correct levels of documentation and limit possible engineering errors and omissions, thereby achieving our clients' goals and objectives.

Purpose

The purpose of this quality procedure (QP) is to provide a common process for construction administration activities performed for both BBL and non-BBL design projects.

The following table provides a general overview of the types of construction-related activities for BBL and BBLES. This procedure applies only to those contractual situations where *construction administration* services are provided. It is important to note that services requiring *construction management* are provided only by BBLES.

BBL	Administration	Inspection or Observation	Partial Technical Oversight and Reporting
BBLES	Management and Supervision		

RESPONSIBILITIES

Principal in Charge (PIC) – The PIC is accountable to the client and for adherence to this QP by the BBL client team.

Project Manager (PM) – The PM is responsible for the overall administration of this procedure and reports to the PIC.

Engineer in Charge (EIC) – The EIC is a professional engineer licensed in the state where the project is located, is employed by BBL, and is responsible for the design-related issues that arise during construction.

Design Engineer – The Design Engineer is the person responsible for development of the design documents. The Design Engineer reports to the EIC for design-related issues.

Engineer of Record (EOR) – The EOR is the engineer who signs and seals the design documents. For design documents developed by BBL, the EOR and the EIC is the same person.

Health and Safety Officer (HSO) – The HSO has overall responsibility for the health and safety of BBL employees during implementation of onsite construction-related activities. Any health and safety questions, concerns, or issues that arise during construction activities must be brought to the attention of the PM and the HSO.

Construction Resident/Resident Engineer – On certain construction projects, a Construction Resident may be assigned. When the Construction Resident is a professional engineer licensed in the state where the construction services are being provided, he/she is referred to as the Resident Engineer. Typically, the Construction Resident/Resident Engineer is a supervisor for the Construction Inspector/Observer (Construction I/O), and communicates directly with the PM, contractor, client, and regulatory agencies, as required.

Construction Inspector/Observer (I/O) – The contract will identify the responsibilities of the Construction I/O,

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whether for inspecting or observing, and documenting construction activities. The Construction I/O typically reports to the PM or the Construction Resident/Resident Engineer. The Construction I/O serves as the client's "eyes and ears".

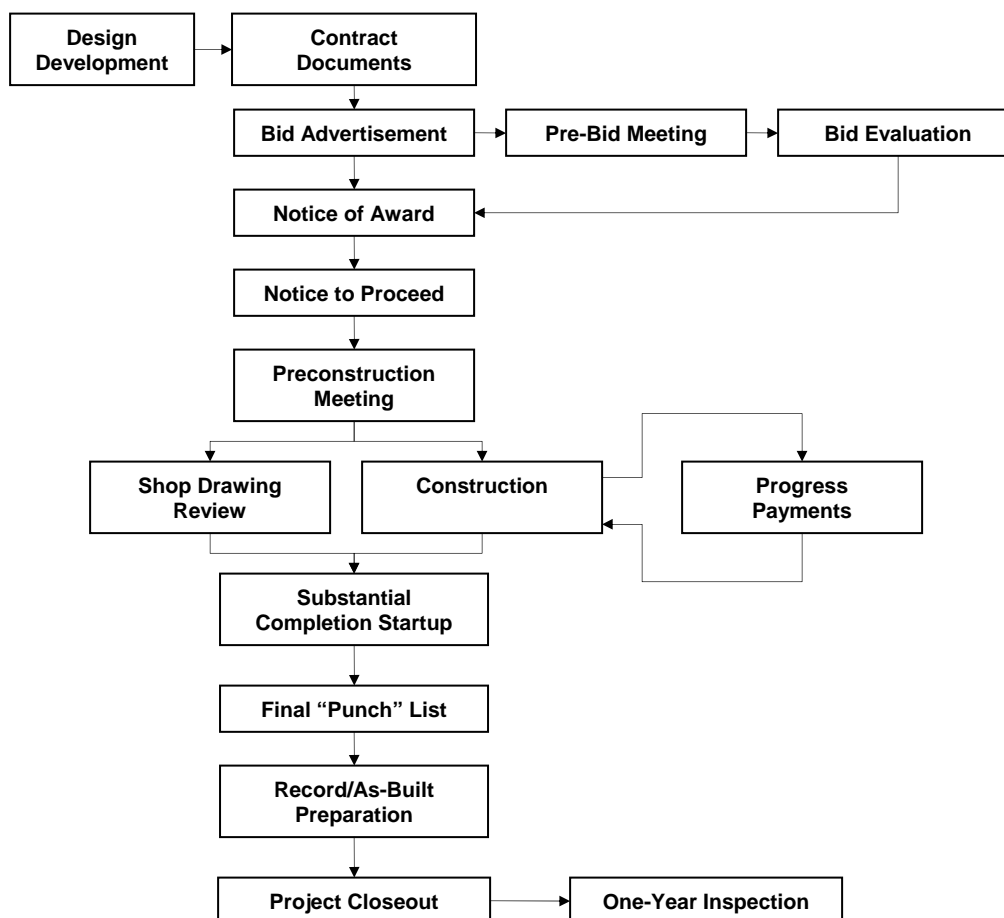
Construction Administrator (CA) – On certain projects, a CA may be assigned. The CA may or may not be a licensed professional engineer. The CA administers/observes the contractor on behalf of the client. At a minimum, this includes reviewing, approving, and monitoring the contractor's construction costs, payment applications, modifications, change orders, construction claims, substantial completion, final acceptance and payment. In some instances, the CA may also take on the responsibilities of the Construction Resident/Resident Engineer.

Client – The client is the owner of the project. The client may be a private firm or entity, or a municipality, and acts as the lead for the overall project, ultimately making all final decisions for the project.

Contractor – The contractor is the primary firm or entity retained by the client to implement the project work activities. The contractor interfaces with the PM, Construction Resident/Resident Engineer, CA, HSO, and client.

DESCRIPTION OF PROCEDURE:

A typical construction administration flowchart is provided below.



1.0 **Bid Assistance** – The advertisement of the Contract Documents for Bid may or may not be handled by the client. If

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BBL has been requested to provide these services on behalf on the client, the following avenues for advertisement are evaluated and considered, depending on whether the bid is public or private: existing list of pre-qualified bidders, public newspapers, trade newspapers/magazines, and internet sites.

Normal practice provides the invited bidders (bidders) with 30 days in which to evaluate the proposed work and generate a bid price. However, this can be modified depending on the complexity of the project or as required by the client. A detailed list of bidders is maintained during the bidding period for construction projects. The list includes the contact name for the bidder, the company name, address, fax number, phone number, and email address.

Changes to the Contract Documents made after the bid process has begun are sent out to bidders in the form of an addendum, and must be sent to all bidders. It is the industry standard that the last addendum to be received by the bidders occurs no later than 5 business days before the noted bid date, allowing contractors bidding the work sufficient time to evaluate changes and to correct/modify their bid price for the project.

An Acknowledgement of Addendum Form is included with the Bid Documents to confirm that the contractor has acknowledged and reviewed all addenda generated for the project. A bid will be disqualified if the Acknowledgement of Addendum Form is not completed or if not all addenda have been acknowledged. Addenda generated during the bidding process must be signed by the EIC and is typically reviewed by the client. The EIC must be identified and involved as part of the project team at the start of a construction administration project and must be allowed sufficient time for review and approval activities.

- 2.0 **Pre-Bid Meeting** – The need for a pre-bid meeting is jointly determined by the EIC, PM, and the client depending on the complexity of the project. This meeting helps to familiarize prospective bidders with specific and unique characteristics of the project; is particularly important in upgrades and modifications to existing facilities; and reviews cases where site constraints, staging, or facilities that must remain in operation during construction of the new work.

If required by the client, the pre-bid meeting may be mandatory. The main purpose of this meeting is to familiarize the bidders with the site location, project size, and objectives. If the pre-bid meeting is noted as mandatory in the Contract Documents, all prospective bidders must attend the meeting in order to submit a bid. Failure to attend a mandatory pre-bid meeting typically results in disqualification of the contractor's bid by the Owner. If the pre-bid meeting is noted as non-mandatory in the Contract Documents, prospective bidders are not required to attend to submit a bid. Additional information presented at the pre-bid meeting that affects the scope of the project and the contractors' bid price or clarifies information provided in the Contract Documents or addenda must be formalized in an addendum to all bidders. Formalizing this information in an addendum protects the client from exposure to potential future change orders by the contractor and provides fair distribution of all relevant information to all potential bidders.

- 3.0 **Bid Evaluation** – As part of our construction administration services, BBL may be requested by the client to perform an evaluation of the bids received from the contractors. The PM, in coordination with the EIC, assigns qualified people to review the proposed bid prices and perform the evaluation. Prior to submitting a recommendation to the client, BBL performs a number of tasks, including, but not limited to, the following:

- review submitted bids for completeness;
- verify the contractor's calculation of bid, especially when the total amount is based on a summation of multiple bid items and unit prices (a sample bid tabulation sheet is available on the corporate Intranet);
- confirm that addenda (if any) have been received by the contractor and are noted on the Acknowledgement of Addendum Form(s);
- confirm attendance at the pre-bid meeting (if mandatory);
- review/document exceptions to the Bid Documents noted by the contractor, estimating the value of each exception;
- develop a bid canvass sheet listing (a sample bid canvass sheet is available on the corporate Intranet), proposed

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bid prices, and the value of exceptions taken by the contractors; and

- develop a recommendation letter to the client for award, which provides the client with a listing of the bids received and a revised listing once the exceptions have been conformed into their proposed bid costs. In accordance with BBL's signing policy (QP 3.17), the recommendation letter must be signed by the EIC, PIC, or officer of the Firm.

4.0 **Notice of Award** – Following the bid evaluation and selection by the client, a Notice of Award letter is sent to the selected contractor. The letter instructs the contractor to submit any additional information (e.g., insurance documentation, bonding) required in the contract so that the owner can issue the Notice to Proceed letter.

5.0 **Notice to Proceed** – Once all necessary documents and information have been received by the client in response to the Notice of Award letter, the contractor is sent a Notice to Proceed letter. This letter provides authorization to begin work in accordance with the Contract Documents/requirements. In most cases, a pre-construction meeting is requested prior to starting construction.

6.0 **Pre-Construction Meeting/Construction Progress Meetings** – A pre-construction meeting is held prior to the start of any BBL construction project to establish project-specific procedures and lines of communication. During the pre-construction meeting, key project issues are addressed (as previously defined in the Contract Documents), including, but not limited to, shop drawing administration and review procedures, client-specific requirements, progress payments, change order procedures, schedule, lines of communication, and emergency phone numbers/contacts. The pre-construction and future progress meetings provide an opportunity for all parties involved in a project to ask and answer questions, discuss and update schedules, address contract/project clarifications and issues, review payment status, and raise other pertinent issues. Meeting minutes are recorded by BBL personnel and provide an essential record of the particulars of each meeting and are distributed to all meeting participants and key project team members. Recipients are given an opportunity to provide comments to the meeting minutes before they are considered final.

7.0 **Shop Drawing Submittal and Review** – The review of contractor shop drawings (e.g., specification sheets, data sheets, sample testing results, samples, schedules) is one of the most important services performed during construction administration. The main purpose for shop drawing review is to verify that the owner is receiving the product or service that was specified in the Contract Documents and was bid on by the contractor. It is standard practice that shop drawings be reviewed and returned to the contractor within 14 calendar days of receipt. A sample shop drawing log template is available on the corporate Intranet.

For non-BBL design projects, where BBL has been requested by the client to perform the shop drawing review, it is highly recommended that the EOR (or the EOR's firm) be on the Construction Administration Team to address any errors or omissions or to confirm the design intent. This information from the EOR shall be developed in the form of a Request for Information/Clarification (RFI) to the EOR. Under this condition, the RFI shall be received and reviewed prior to approving or returning the contractor's shop drawing. RFIs generated on a project are to be logged, tracked, and filed as part of the shop drawing review process. If a design-related change order is required as a result of an RFI from a contractor, the resulting design change/modifications are prepared by the EOR. The process for shop drawing review is as follows:

- If multiple disciplines (e.g., mechanical, electrical, instrumentation and controls) are represented in one shop drawing, representatives of all of the disciplines involved must review the shop drawing, initial and date the shop drawing stamp, and provide their comments to the primary reviewer, who will sign the shop drawing.
- A shop drawing log is generated and maintained for BBL construction administration projects. At a minimum the log should record and track the following information: date received, title, shop drawing tracking number, specification section, list of disciplines involved in review, shop drawing code (i.e., Reviewed, Reviewed as Noted, Revise and Resubmit, Rejected), and date returned to contractor. Shop drawings received by BBL are date-stamped upon receipt.
- If a shop drawing has been marked either "Revise and Resubmit" or "Rejected," the shop drawing log also

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provides information for possible re-submittals of the same shop drawing by the contractor.

At a minimum, four (4) copies of all shop drawings are specified and provided by the contractor. One reviewed copy of shop drawings is routed to and maintained in each of the following locations: project file, inspector/field office, owner, and contractor (for action). If additional copies are provided, one original “clean” copy is placed in the project file. For large or complex construction projects, the contractor may require multiple copies of the shop drawing. As a result, it is recommended that at least eight (8) copies of all shop drawing be specified in the Contract Documents.

If possible, the EIC designates the Design Engineer as the shop drawing reviewer since this individual is the most familiar with the intent of the design. If this is not possible, the Design Engineer should be made available to answer questions that may arise during shop drawing review relative to the design or the intent of the design. The shop drawing reviewer must become familiar with and understand the basis of the design prior to performing his review.

Shop drawings are checked against the specifications and drawings for compliance with the Contract Documents. For small projects where only a few shop drawings are being processed, review comments and notes can be marked (in red ink) directly on the shop drawing copy that is being returned to the contractor. Comments and notes must be duplicated (in red ink) on the BBL file copy. Information that has been checked and verified during the review process must be identified in yellow ink. The BBL shop drawing stamp is placed on the upper right-hand corner of the shop drawing (if possible) in red ink.

For larger projects, where the contractor requires that multiple copies of the shop drawing be processed and returned, comments and notes can be made on an 8½- by 11-inch cover sheet that is stapled to the shop drawing. If this method of conveying shop drawing review notes is utilized, the BBL shop drawings review stamp is placed on the front of the cover sheet in red. The reviewer assigns one of four designations to the shop drawing(s):

- **Reviewed** – This is selected when the submittal is in full compliance with the Contract Documents and requirements. The submittal is returned to the contractor “clean” (without comments).
- **Reviewed as Noted** – This is used when there are comments or notes that do not change the intent of the design. This may also serve as a reminder of a particular requirement that the submittal does not specifically address. The contractor is authorized to proceed with procurement provided he/she complies with the comments or notes on the submittal. A re-submittal confirming the instructions or comments is *not* required by the contractor.
- **Revise and Resubmit** – This is used when there are significant comments and notes (i.e., requests for additional information) on the submittal. BBL requires the contractor to prepare and submit another shop drawing for review prior to procurement of materials or equipment. If the shop drawing is not resubmitted, the procurement is undertaken at the contractor’s sole risk, and the contractor may be ordered to remove equipment or material from the job site for failure to comply with the contract requirements. Under certain circumstances, the contractor may be required to resubmit the shop drawing as “final copy to file” only. This action is taken only in the case of a critical submittal to verify that the changes noted on the shop drawing have been acknowledged and made.
- **Rejected** – This is used when the proposed equipment or material clearly does not meet the requirements of the Contract Documents (e.g., proposed equipment is deficient and cannot be sufficiently modified).

For all shop drawings stamped “Reviewed” or “Revise and Resubmit,” the project engineer reviewing the shop drawings signs the shop drawing approval stamp and return the shop drawing to the contractor. For all shop drawings stamped “Reviewed as Noted” or “Rejected,” the EIC must review and sign the shop drawing.

8.0 Development of Design-Related Change Orders – A design-related change order is required when it becomes necessary either to change the originally proposed contract work or to perform work not called for in the Contract

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Documents. Design-related change orders can be initiated by the contractor, Design Engineer, or client. Design-related change orders are likely to result from changed conditions, proposed modifications to expedite the work, or other conditions that were not accounted for at the time of design. They may also result from engineering errors and/or omissions. If BBL is the Design Engineer, and a design-related change order is required because of a possible engineering error and/or omission, the PM and the EIC must be contacted immediately. If deemed necessary by the EIC, BBL's Legal Division is contacted. If it is determined that a design-related change order is required on a project, the EIC reviews the proposed design modifications, design development, details, and estimated construction costs associated with the change order prior to submitting it to the client for review and the contractor for action. The final change order and associated documents must be signed and sealed by the EIC.

As previously noted, for projects where BBL is not the EOR but is providing construction administration services, the client should be encouraged to hire the EOR as part of the Construction Administration Team to address the design-related questions during shop drawing review and to develop any design-related change orders that may be required during the project. Under this condition, BBL maintains, tracks, and logs a copy of the design-related change order request from the EOR.

- 9.0 **Request for Information/Clarifications (RFI)** – During construction, the contractor often requires additional information or clarification of the Design Engineer's intent in order to correctly implement the work. All RFIs are logged and tracked. For all BBL design projects, the Design Engineer reviews the RFI and consults with the EIC prior to returning the RFI to the contractor. For each project, a standard RFI response form is generated to help expedite the process. It is industry standard that RFI responses be signed by the EIC and returned to the contractor within 7 days to avoid potential delay claims.
- 10.0 **Progress Payments** – On most projects, the contractor submits a monthly application for payment. The format to be used is determined by the Construction Resident and the contractor/contractor's representative prior to submitting the first application for payment. For most projects, the American Institute of Architects (AIA) standard form is used to establish the schedule of values. Approval of the value of work completed by the contractor is based on values established in the approved schedule of values, multiplied by an estimated percentage of completion for each line item. Submitted "percent complete" estimates are reviewed by the Construction Resident and EIC prior to approval of the progress payment. If retainage is specified in the Contract Documents and not developed as a separate line item, retainage is to be held for each line item until the construction is completed.
- 11.0 **Substantial Completion** – The client may require use or occupancy of the work (or designated parts thereof) even though all of the contract work (or designated parts thereof) may not be substantially complete. Substantial completion is that stage of progress when the contractor has completed all of the work of the contract except for minor incidental items, the existence of which will not affect or impede the client's intended use of the work, as determined by the client. Early tracking of closeout issue results is highly recommended to maintain an on-time project closeout. A sample construction completion/closeout tracking log is provided on the corporate Intranet.
- 12.0 **Project Closeout**
 - 12.1 **Final Testing** - Final testing required by the Contract Documents is tracked to confirm conformance and to determine schedule impact. The requirement for the equipment manufacturer to provide proposed final test procedures is specified in the Contract Documents as a submittal for shop drawing review by the Design Engineer prior to testing. Any unresolved issues following final testing generate the contractor's punch list. All punch-list items must be completed and/or resolved before final acceptance by the owner and final payment to the contractor.
 - 12.2 **Final Record Documents** – An important aspect of project closeout is to obtain all final record documents from the contractor. These records normally include a final copy of the working drawings, as-built drawings,

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operation and maintenance manuals, correspondence, certifications, permits, warranties, and other specified requirements.

- 12.3 **Final Inspection** – Final inspection is required when the project is at completion. The final inspection is typically performed with the CA, client, contractor, and regulatory agency (if required). The CA uses professional judgment as to the scope of this inspection, and requests the client's participation to confirm or deny acceptance. Upon the completion of the final inspection, a report is prepared that includes project identification, scope of inspection, a punch list of deficiency items, corrective actions for the deficiency items, anticipated completion date for the deficiency items, and any necessary follow-up actions. Any unresolved issues from the final inspection and the punch list must be completed by the contractor prior to final acceptance and approval of the project.
- 12.4 **Final Acceptance** – Based on a formal request by the contractor and a formal recommendation provided by the CA, final acceptance is determined by the client once all of the project requirements have been fulfilled by the contractor, which includes the completion of construction activities, resolution of contractor change orders/claim costs, completion of punch list items, and receipt of all final record documents. In addition, the CA shall provide the client with the final construction costs and an explanation of the quantity overruns and under runs associated with the project. Once the client determines final acceptance, a formal letter will be submitted to the contractor and final payment to the contractor (with the exception of projects that require a retainage to be held until after the one-year inspection, based on contract requirements) will be granted.
- 12.5 **One-Year Inspection** – If required in the contract between the contractor and client, this inspection is generally conducted just prior to one year after substantial completion. During this inspection, the contract work is examined for any defect in materials and/or workmanship, and for physical and operational compliance with the approved construction documents, supporting documents, and client-approved revisions. Pending the client's approval of the one-year inspection, final payment to the contractor (either specified retainage held or retainage bond) is normally released.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

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STATEMENT OF POLICY:

It is BBL's policy to have contracts, proposals, and work products (e.g., specifications, drawings, alternatives evaluations) signed by a professional in responsible charge of the activity.

Purpose

The purpose of this quality procedure (QP) is to:

- document responsibility for the final document, and
- maintain BBL compliance with the licensing laws of the various states relating to the practices of engineering and geology.

RESPONSIBILITIES

Principal in Charge (PIC) – The PIC is ultimately accountable for the implementation and strict enforcement of this QP.

Licensed Professionals, Project Officers, and Project Managers – Each discipline is responsible for following the requirements identified within this QP.

BBL Staff – Staff affected by this QP are required to follow its requirements.

DEFINITIONS

Note: Because each state defines engineering and geology differently, generic definitions common to most, if not all states are provided in this QP. The practice of engineering (all states) and geology (select states) may be performed only by individuals licensed in the state where the project is located, or by an individual working directly under the supervision and control of a professional licensed in that state. In addition, it may be necessary for BBL as an entity to be licensed/registered in the state.

Practice of Engineering – Performing professional or creative services such as consultation, investigation, evaluation, planning, design, or supervision of construction or operation in connection with any public or private utilities, structures, machines, processes, circuits, building, equipment, or projects; wherein the safeguarding of life, health, or property is concerned, when such service requires education, training, and experience in engineering sciences and the application of special knowledge of the mathematical, physical, and engineering services.

Practice of Geology/Geosciences – Performing geological services or work such as consultation, investigation, surveys, evaluations, planning, mapping, and inspection relating to a service or work, wherein the safeguarding of life, health, property, and the environment is concerned, when such service or work requires the education, training, experience, and knowledge of geosciences, mathematics, and the supporting physical, chemical, mineralogical, morphological, and life sciences.

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DESCRIPTION OF PROCEDURE

In all cases, only individuals authorized to sign for the BBL company (i.e., BBL, BBLES, TER) responsible for the work may sign contracts, proposals, or work products.

- Generally, we transmit two types of proposals for work: cost and non-cost technical. All cost proposals (those that present a final or estimated cost for work to be performed) must be signed by the PIC or Project Officer and the appropriate Proposal or Project Manager. If a proposal does not include cost, the PIC can delegate the signing of the proposal to the Proposal or Project Manager preparing the document.
- Any contract, subcontract, or Schedule A must be signed by the officer responsible for negotiating the document.
- Engineering alternatives evaluations, preliminary designs, final designs, construction cost estimates, and other engineering work products must be signed by the professional engineer (P.E.) in responsible charge of the work. In most cases, this will be an officer. However, there are times when the professional in responsible charge is not an officer and, in those cases, this individual will be authorized (in writing) by the Project Officer to sign the work. In all cases, a P.E. licensed in the state where the project exists will be the signing engineer.
- Geological drawings and other work products, when required by state law to be signed by a professional geologist (P.G.) in responsible charge of the work, will be signed consistent with that law. When the P.G. in responsible charge is not an officer, this individual will be authorized (in writing) by the Project Officer to sign the work. In all cases, a P.G. licensed in the state where the project exists will be the signing geologist. In states that do not license geologists, the designated geologist in responsible charge will sign.
- Final reports and documents (electronic or bound/hard-copy format) that present the evaluations, opinions, recommendations or conclusions of the Firm will be signed by the Project Officer or appropriate designee in charge of the work. In those cases where the document requires the signature of the licensed professional, the document also will be signed by that individual, as shown in Example #1. Signature blocks are to be included either on or behind the cover page or at the end of the text sections of reports (i.e., conclusions/recommendations section) or as required by the client. BBL and BBLES cover page templates (with signature blocks) are available through appropriate AA/ES support personnel.
- The PIC/Project Officer and the P.E./P.G. in responsible charge must identify and determine all appropriate and/or legally mandated signing and sealing requirements for any subcontractors or subconsultants who contribute to P.E./P.G.-required activities.
- For projects where BBL is teaming with another entity (e.g., joint-venture, LLC) or where the client issues a report or design based on work performed by BBL and/or other consultants, the P.E./P.G. must contact the Legal Division for appropriate guidance.
- Memos, letters, and electronic submissions that present the evaluations, opinions, recommendations, or conclusions of the firm will be signed by the Project Officer or Project Manager. If the document contains professional engineering- or geology-related material (as defined above), the P.E. and/or P.G. in responsible charge will be identified as a recipient of the document, as shown in Example #2.
- When a P.E. or P.G. who is not licensed in a state that requires professional licensing signs a document that is not considered the professional practice of either engineering or geology, he or she must identify his/her state and license number, as shown in Example #3.

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EXAMPLE #1

Respectfully submitted,

BLASLAND, BOUCK & LEE, INC.

Signature of Project Officer
 Typed name of Project Officer
 Typed title of Project Officer

Signature of Engineer
 Typed name of Engineer, P.E.
 Typed title of Engineer

Signature of Geologist
 Typed name of Geologist, P.G.
 Typed title of Geologist

Prepared by:

Typed Name
 Typed Name

EXAMPLE #2

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Signature of Project Officer or Project Manager
 Typed name of Project Officer or Project Manager
 Typed title of Project Officer or Project Manager

cc: William H. Bouck, P.E., New York, #052405-1 (example only)

EXAMPLE #3

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Signature of Engineer or Geologist
 Typed name of Professional Engineer or Professional Geologist
 Typed state and registration number
 Typed title

- END OF PROCEDURE -

Chief Executive
 Authorization: _____

Date: _____

BBL	TOPIC:		ENVIRONMENTAL COST ESTIMATES	QP 3.18
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STATEMENT OF POLICY:

It is BBL's policy that all cost estimates be developed in accordance with sound methodology and be appropriately documented. Environmental cost estimates are not designed for financial disclosure or reporting purposes and should be used for management decision-making purposes only.

General Overview of Sarbanes-Oxley Act

Effect of Sarbanes-Oxley on Environmental Liability Reporting

The Sarbanes-Oxley Act and related regulations do not directly address environmental liability reporting issues. However, this legislation and these regulations have increased the focus on proper disclosure of financial risks, which include actual and contingent risks associated with environmental liabilities. Sarbanes-Oxley drives home this increased focus by requiring that CEOs and CFOs certify to financial disclosures in Securities and Exchange Commission (SEC) filings, and certify to their ongoing evaluation of internal controls and procedures geared toward facilitating proper financial reporting.

It is within this atmosphere of greater scrutiny of financial disclosures (and greater liability for CEOs and CFOs concerning improper or inadequate financial disclosures) that we can expect many of our clients to reevaluate their processes for identifying, quantifying, and reporting their environmental liabilities. The Sarbanes-Oxley requirements for systematic controls and procedures to facilitate proper financial reporting may cause some of our clients to reevaluate their approach to estimating and disclosing their environmental liabilities.

Impact on BBL and Its Affiliated Companies

BBL is not licensed or insured to provide financial or legal consulting services by giving clients advice regarding financial reporting. BBL shall identify clearly to our clients that we are not financial or legal consultants and that our cost estimates are provided for business decision-making purposes only. Certified Public Accountants (CPAs) and attorneys are charged premium malpractice insurance rates when they practice in this area because of the significant broad-based exposure associated with financial reporting for public companies.

Promotional Materials

BBL excludes from all of our promotional materials any suggestion that we are in the position to advise our clients concerning financial reporting requirements for their environmental liabilities and costs. We promote the fact that we will assist clients with the analyses and measurements of environmental liabilities and costs for management and business decision-making purposes, often in conjunction with helping our clients design and implement sound environmental management processes.

Purpose

The purpose of this quality procedure (QP) is to clearly communicate BBL's common process and established guidelines for creating environmental cost estimates.

Responsibilities

Principal in Charge (PIC) – The PIC is ultimately accountable for the implementation and strict enforcement of this QP.

Proposal Managers, Project Officers, Project Managers, and Task Managers – Each member of the project management team is responsible for following the requirements identified within this QP.

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Peer Reviewer – A technical expert in the functional activities for which costs are being estimated. This individual is responsible for assisting in the identification of methodology to be used, and for the review and approval of the cost estimate prior to its delivery or presentation to the client.

BBL Staff – Staff involved in the development of cost estimates are required to follow the requirements within this QP.

Cost Estimate Definitions

Level 1 – Pre-Remedial Investigation (Order of Magnitude) Cost Estimate – BBL is occasionally requested to provide an “order of magnitude” or “ball park” cost estimate for a certain project or activity being considered by a client. Usually, these requests are at the very early stages of a project (or a potential project), when very little site- or project- specific information exists, but our client wants to have a general understanding of the cost for potential alternatives. These estimates may even be used for conceptual screening purposes. Typically, these types of estimates are developed using non-site-specific unit prices from reference sources and/or actual costs of projects or activities on previously completed projects of a scope and magnitude similar to those being considered by our client. An example may include estimating the cost to install an engineered capping system over impacted materials at a site versus the cost to excavate and dispose the impacted materials offsite. Since this estimate involves very little site- or project-specific information, the level of accuracy associated with this type of estimate is the lowest of all cost estimates. Pre-investigation or Order of magnitude cost estimates are typically prepared for a short list of remedial options (or a single option) being considered by our clients and have not undergone a thorough engineering evaluation.

Level 2 – Post-Investigation Cost Estimate – Clients often request environmental cost estimates for sites once site investigation activities are in progress or complete but prior to the engineering evaluation of remedial alternatives. These cost estimates are typically requested to provide clients with information for: (1) near- and mid-term budgeting and/or (2) environmental reserve planning. **The level of accuracy associated with this type of estimate is usually -50% to +100%.** Post-investigation cost estimates are typically prepared for a short list of remedial options considered by the engineer to be potentially implementable but which have not undergone the engineering evaluation process of a feasibility study (FS). These costs are usually generated using non-site-specific unit costs from reference sources and/or unit costs generated from the experience of the engineer.

Level 3 – Feasibility Study Cost Estimate – FS cost estimates are prepared for the purpose of comparing potential alternatives during the engineering evaluation of remedial action alternatives. The level of accuracy of this type of cost estimates is dependent on the quality and amount of remedial investigation data, as well as the degree of development of the remedial alternatives. Since uncertainty is inherent in the FS process (alternatives are in the conceptual phase), the accuracy of cost estimates prepared at the FS stage are typically less than when prepared at the design stage, but greater than when prepared at the post-investigation phase. The United States Environmental Protection Agency (USEPA) has published guidelines available for use in the preparation of FS costs estimates as part of the Superfund process: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study (USEPA, July 2000). **This document indicates that the anticipated accuracy of estimates prepared at this stage should be -30% to +50%.**

Level 4 – Engineering (Construction/Design) Cost Estimate – Clients often include in the scope of engineering design services a provision that requires BBL to prepare an engineering cost estimate of project construction costs, based on our knowledge of the project and carefully evaluated final plans and specifications. These estimates are critical planning tools that are often relied upon by our clients to budget capital funds. **Anticipated accuracy of estimates prepared at this stage should be -10% to +10%.**

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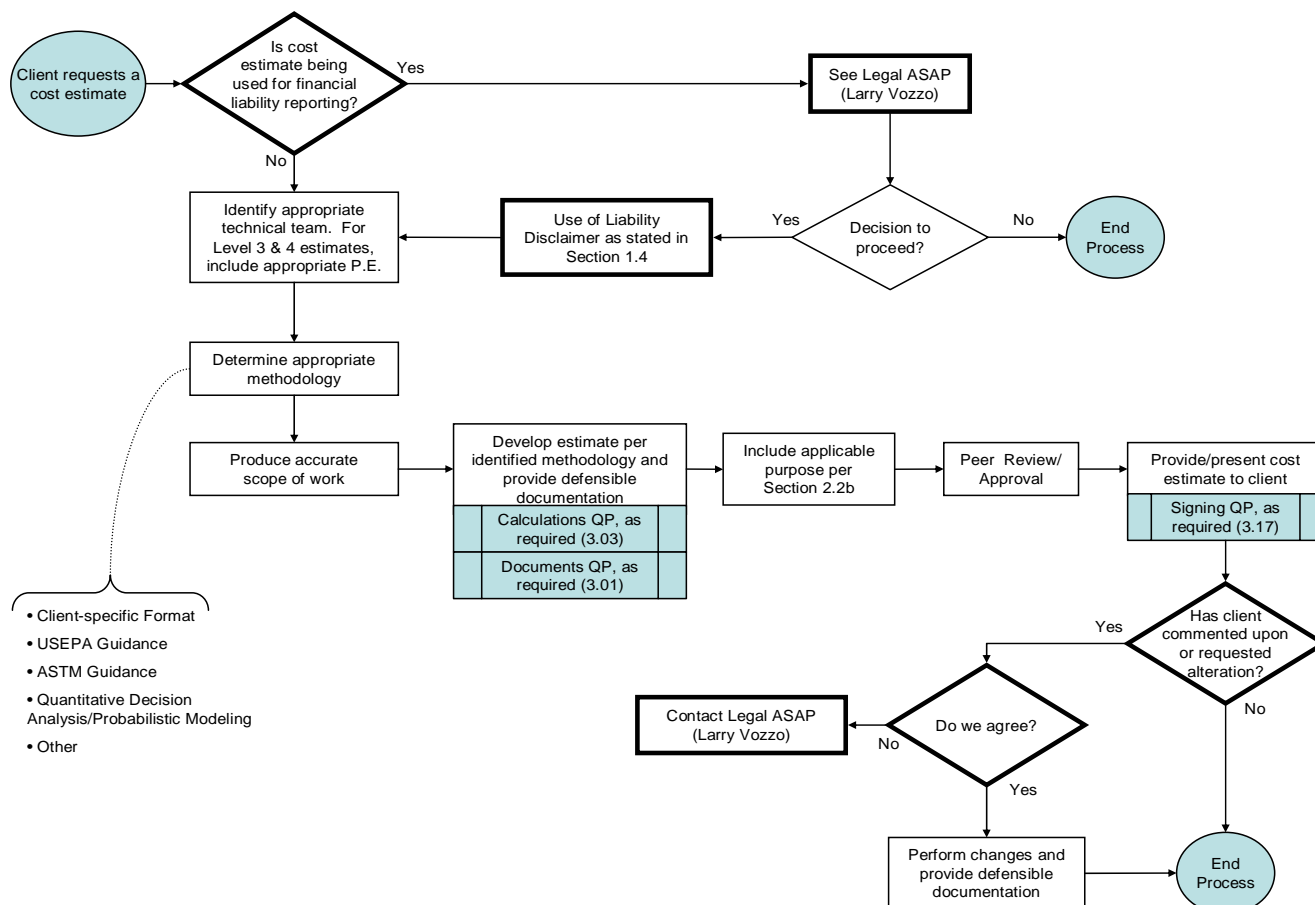
Cost Analysis Definitions

Quantitative Decision Analysis – A quantitative decision analysis (QDA) will show the probability distribution for a number of alternative strategies at the site. The QDA provides guidance about which strategies are most likely to meet specific corporate objectives, the factors that the analysis is most sensitive to, and the potential value of collecting additional information. By design, the QDA reflects the uncertainty concerning, among other things, unit costs, regulatory acceptance, and the results of future investigations. Moreover, the analysis may also be based on professional judgment, literature values, and site-specific values. Finally, depending on the circumstances, the analysis may actually represent differences in cost between alternatives, not the absolute magnitude of the cost of each alternative.

Portfolio Analysis – A Portfolio Analysis shows the probability distribution of the total costs over a number of sites. This analysis takes into account the degree of correlation or independence of the cost outcomes for each site. For example, the chance of hitting the “best case” outcome at all sites is remote. This result will be reflected in the portfolio model. A characteristic of a portfolio model is that the relative uncertainty of achieving an expected outcome at a single site may be higher than the relative uncertainty of achieving an expected total outcome across all sites.

DESCRIPTION OF PROCEDURE

QP 3.18 follows the general process depicted in the following flowchart:



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1.0 Identification of Cost Estimate Request from Client (Planning)

1.1 Define Requirements/Expectations – Identify Client Intent of Use

The PIC/PM should discuss with the client his or her requirements and expectations of the cost estimate requested. It is important during this exchange that we establish whether this estimate is intended to be used for financial liability reporting. The client team gathers as much information as possible from the client to confirm that the scope of work and level of effort match the expectation and intended use of the cost estimate.

If the client indicates at this time that the estimate is intended for financial liability reporting, the Legal Division should be engaged immediately in the process. It is imperative that the client team document all information gathered from the client and send a copy of that documentation to the Legal Division, if financial liability reporting is indicated.

1.2 Determine the Technical Team and Approach

The next step is to establish an appropriate project team of professionals to create a scope of work for the cost estimate. A task manager should be assigned to lead the team, which will select a methodology to estimate the cost. For all Level 3 and 4 cost estimates, a licensed professional engineer in the state where the project is located must be included as a team member (for certifying purposes).

1.3 Scope of Work

The scope of work should be documented and submitted to the client in sufficient detail to clearly convey the work product we intend to produce. Include the following (at a minimum):

- methodology to be used;
- areas to be addressed;
- items and issues not included; and
- expectations as to the expected accuracy of this work product.

1.4 Cost Estimate Disclaimer

BBL is, on occasion, put in the position of providing information that we know will be used for financial reporting purposes. Under any circumstances that a project manager or PIC believes this could occur, the information BBL provides will be accompanied by a disclaimer (provided below) that the cost estimates were not developed for financial reporting purposes and will note that we are not experts at determining whether computations or disclosures are consistent with Generally Accepted Accounting Practices (GAAP).

BBL prepared these estimates using current and generally accepted engineering cost estimation methods. These estimates are based on assumptions concerning future events, and actual costs may be affected by known and unknown risks, including, but not limited to changes in general economic and business conditions, site conditions which were unknown to BBL at the time the estimates were prepared, future changes in site conditions, regulatory or enforcement policy changes, and delays in performance. Actual costs may vary from these estimates, and such variations may be material. We are not licensed as accountants or securities attorneys, and therefore make no representations that these cost estimates form an appropriate basis for complying with financial reporting requirements for such costs.

2.0 Development of Cost Estimate (Execution)

2.1 Determine Methodology to Be Used

There are a variety of cost estimating tools and methods available, including:

- Client-specific examples of cost estimates that have been previously prepared;

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- USEPA guidance documents (e.g., *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* [USEPA, July 2000]);
- ASTM International (formerly American Society for Testing and Materials) (ASTM) guidance documents (e.g., *Standard Guide for Estimating Monetary Costs and Liability for Environmental Matters* [E2137-01, ASTM 2001]). E2137-01 guides the estimator in identifying and utilizing four distinct approaches, as follows:
 - Expected Value – an estimate of the mean value of an unknown quantity that represents a probability-weighted average over the range of all possible values,
 - Most Likely Value –the cost of the scenario most likely to occur (e.g., a stated preferred remedy),
 - Range of Values – the range of values that should cover costs (from a low cost estimate to a high cost estimate, based on reasonable assumptions), and
 - Known Minimum Value – when the outcome and cost uncertainties are so great that it is premature to estimate a range of values or a most likely value; and
- Quantitative Decision Analysis/Probabilistic Models
- Published Industry Standard Guidance Documents (e.g., RS Means Estimating Guide)

All of these methods utilize two main approaches – detailed or parametric. The detailed approach estimates costs on an item-by-item basis. The parametric approach relies on relationships between cost and design parameters that can be “scaled-up” or “scaled-down” versions of projects where historical cost data are available or a model where a generic design is linked to a cost database that is adjusted by the user for site-specific information. The PM and the applicable peer reviewer must identify the appropriate methodology based on the project objectives and the information available.

2.2 Develop Cost Estimate per Identified Methodology

Once the methodology has been determined, the cost estimate can be developed consistent with these requirements. The following is a guide for the steps required in completing a cost estimate:

- a. Describe the alternative.
 - b. State the purpose of the cost estimate.
 - c. Identify the cost components.
 - d. Estimate the quantities and costs.
 - e. Determine the contingency.
 - f. Conduct present value analysis, if appropriate.
 - g. State the assumptions used to generate the numbers.
 - h. Conduct sensitivity analysis, if appropriate.
- a. Describe Alternative – As the first step, the remedial alternative should clearly be described in concise terms. The description should include the remedial action objectives. For example:
“Under this remedial alternative, all sediment greater than 10 ppm PCBs in the top 2 feet of the creek will be excavated and disposed offsite. Excavations will be backfilled with imported clean material. Site restoration will also include fish habitat restoration components. Monitoring, consisting of annual inspections for erosion, will be performed for 5 years following completion of remediation.”
 - b. State Purpose – The intended purpose of the cost estimate must be clearly stated on each estimate. For example:

Level 1 – Pre-Remedial Investigation (Order of Magnitude) Cost Estimate

“This cost was developed prior to obtaining site-specific remedial investigation data. It is based

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on professional experience and the application of remedial technology, regulatory environments, and potential environmental issues. In general, this information is to be used for conceptual screening purposes. Utilization of this cost estimate information beyond the stated purpose is not recommended. BBL is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability reserves.”

Level 2 – Post-Investigation Cost Estimate

“This cost estimate represents the first opportunity to create a preliminary evaluation of potential alternatives, based on site-specific information collected during the Remedial Investigation process. The intended use is to provide early-stage “order of magnitude” costs to allow for management decisions regarding further courses of action. Utilization of this cost estimate information beyond the stated purpose is not recommended. BBL is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability reserves.”

Level 3 – Feasibility Study Cost Estimate

“This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual project cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. BBL is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability reserves.”

Level 4 – Engineering (Construction/Design) Cost Estimate

“In providing opinions of probable construction costs, the Client understands that the design professional has no control over costs; the price of labor, equipment, or materials; or the construction contractor’s methods of pricing. The opinions of probable construction costs provided herein are to be made on the basis of the Design Professional’s qualifications and experience. The Design Professional makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs. This cost estimate is expected to be within -10% to +10% of the actual project cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. BBL is not licensed to provide financial or legal consulting services, as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability reserves.”

Quantitative Decision Analysis and Portfolio Analysis

“This analysis assists management in estimating the potential future costs of their environmental liabilities. The estimates are designed for developing and implementing strategies that will help discharge those liabilities efficiently. Changes in technology, corporate strategy, regulatory framework, and materials will cause the actual costs to vary from these estimated costs. Utilization of this cost estimate information beyond the stated purpose is not recommended. BBL is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability reserves.”

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- c. Identify Cost Components – This step involves development of the structure of the cost estimate and the various cost components that comprise the estimate. The level of detail must be determined by the PM and the peer reviewer. The following example checklist may be used as a guide:

- Mobilization/Demobilization
- Additional Investigation
- Site Preparation
- Demolition and Removal
- SurfaceWater Collection/Treatment/Control
- Groundwater Extraction/Treatment/Control
- Gas/Vapor Collection/Control
- Soil Excavation
- Sediment/Sludge Removal
- Sampling and Analysis
- Geotechnical Testing
- Backfill
- Cap/Cover
- Onsite Treatment
- Offsite Treatment/Disposal
- Site Restoration
- Project Management
- Remedial Design/Design
- Construction Management
- Institutional Controls
- Operation and Maintenance (O&M)
- Permits
- Contractor's Overhead/Profit
- Project Duration
- Seasonal Considerations
- Prevailing Wage Rates/Labor Costs
- Taxes and Fees

- d. Estimate Quantities and Costs – This step includes estimating the quantities, the cost data, and the professional and technical services. The cost of each construction element and O&M activity is estimated in this step. If the cost element is divided into several sub-elements, each sub-element should be estimated and then summed for a cost element subtotal.

The estimation of quantities is dependent on the quality and quantity of site characterization data. Quantity estimates used in the development of a cost estimate must be clearly documented in accordance with QP 2.03 (Preparation and Review of Calculations).

A variety of sources are available to aid in the selection of cost data. Potential sources include:

- cost estimating guides/references (e.g., RS Means);
- quotes from vendors or contractors;
- experience from other projects; and
- cost estimating software/databases.

Each source used in the development of the costs must be clearly documented within the estimate, including the portions of the estimates that were developed by others.

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Professional and technical services should be estimated as a percentage of construction costs, unless sufficient project definition exists to perform detailed estimates. Typical cost ranges are:

- Project Management (5-10%);
- Remedial Design (5-20%); and
- Construction Management (5-20%).

- e. Determine Contingency – Contingencies are applied to cost estimates to cover unknowns, unforeseen circumstances, or unanticipated conditions that cannot be evaluated from the data or project knowledge available at the time of preparation of the estimate. Contingencies are typically applied to the total construction or O&M costs and not applied on an item-by-item basis.

As the level of project definition increases from the investigation stage through final design, the contingency should decrease. The selection of contingency is based on engineering judgment. Some suggested contingency ranges are presented below:

- Post-Remedial Investigation/Screening of alternatives 25-50%;
- FS/Conceptual Design 15-30%; and
- Final Design 10-20%.

- f. Conduct Present Value Analysis – If remedial expenses will be incurred in a future year, rather than in the year that the estimate is prepared, and/or costs are included as part of the estimate, a present-value analysis must be conducted so that alternatives that occur over different time periods can be compared. The present-value analysis should be conducted consistent with standard economic practices.

- g. State Assumptions – It is important that the assumptions be clearly stated within the estimate. It is recommended that a separate note be prepared for each cost element to describe the assumptions associated with that cost element. The assumptions should also identify any significant items that are not included in the cost estimate. For example, “This estimate does not include costs associated with regulatory negotiations, financing costs, property access, or legal fees.”

- h. Conduct Sensitivity Analysis – In certain cases, it may be appropriate to conduct a sensitivity analysis of the cost estimate. A sensitivity analysis evaluates the impact of changing one or more of the cost elements that have a high degree of uncertainty and that, with only a small change, could significantly impact the overall costs. The decision to perform the sensitivity analysis will be determined by the PM in consultation with the peer reviewer.

2.3 Document/Report Generation and Delivery

QP 3.01 (Technical Documents Process) is to be followed when planning, developing, and delivering a cost estimate. This QP is available on the corporate Intranet.

3.0 Review, Approval, and Delivery of Cost Estimate

3.1 Peer Review and Approval

Preparation of cost estimates typically includes research of the factors that are used during the calculation of costs (e.g., material amounts and unit costs); the actual calculation of the costs themselves; and preparation of a textual description of the estimation and calculation methods used, assumptions made, and appropriate uses/limitations of the cost estimate. In accordance with the requirements of QP 3.01 (Technical Document Process), cost estimates shall be reviewed by a peer reviewer. The PM shall identify the appropriate peer

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reviewer in accordance with QP 3.01. Where appropriate, the PM may utilize appropriate construction department personnel to provide input for cost estimates and/or to serve as a peer reviewer. Review and approval of cost estimate calculations shall be performed in accordance with the requirements of QP 3.03 (Preparation of Calculations).

3.2 Signing Requirements

QP 3.17 (Signing Requirements) is to be followed when delivering a written cost proposal to a client. This QP is available on the corporate Intranet.

3.3 Delivery of Cost Estimate

Delivery of a written cost estimate will be performed in accordance with QP 3.01 (Technical Documents Process), available on the corporate Intranet.

3.4 Client Review of Cost Estimate

During the presentation, either verbal or written, of a cost estimate and the subsequent review with the client, it is anticipated that there will be client comments that identify areas of the cost estimate that should be changed on the basis of additional information conveyed by the client. In those situations, there is an opportunity to modify the cost estimate if we agree that the new information presented by the client warrants that change. However, in cases where we do not believe that the information identified warrants a change, or if a request is made to modify the cost estimate without the identification of new information that would warrant a change, it is inappropriate and unethical to make such a change. The Legal Division should be contacted if this situation cannot be resolved with the client.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	TOPIC:		GEOTECHNICAL ENGINEERING PROCESS		QP 3.19
	Revision A (08/16/04)		SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is our Firm's policy that all geotechnical engineering design work (pre-design investigations, design reports and letters, work plans, contract drawings, technical specifications, performance specifications, and pre-purchase specifications) produced by BBL and its affiliated companies be developed under the guidance of and be signed by the designated Geotechnical Engineer (GE). BBL design projects incorporating any geotechnical engineering work are performed using appropriately skilled geotechnical engineering personnel in a "best team" approach and must be technically sound and developed using the appropriate engineering standards and codes, meet the client's goals and objectives, and comply with all applicable local, regional, state, and federal requirements.

Purpose

The purpose of this quality procedure (QP) is to define a common process for geotechnical engineering design issues prepared within BBL and our subconsultants for all of our clients.

Responsibilities

The Principal in Charge (PIC), in association with the Resource Manager/Coordinator of his or her group, is responsible for identifying and selecting the Project Manager (PM) for any given design-related project. If the PIC is not the Engineer-in-Charge (EIC), the PIC will designate the EIC for the project (Note: EIC responsibilities are described in QP 3.08). The PIC is responsible for verifying that sufficient budget for full implementation of the EIC/GE function is provided. The PIC and the PM, in association with the GE, are responsible for assembling the appropriate geotechnical design team. The PIC, PM, and EIC will work in concert with the GE to minimize the potential for liability, conflicts, or a misunderstanding of client expectations associated with the design activities.

The Geotechnical Engineer (GE) is a Professional Engineer (PE), registered in the state of the project and authorized under that state's licensing laws to oversee the following geotechnical design-related activities:

- overall design effort, including conceptual, preliminary, and final design, with direction for all applications of the geotechnical work efforts;
- review of the geotechnical design team's qualifications and approval of the selection of the design team members to perform geotechnical work; and
- verification that all geotechnical design elements are undertaken by appropriate design team members to achieve a project design that meets acceptable engineering standards and codes and industry standard of care, and is produced in accordance with the applicable state licensing requirements.

The Project Manager (PM), in association with the EIC, is responsible for managing the day-to-day engineering work of the design team. The PM is responsible for determining that sufficient budget for full implementation of the EIC/GE function is provided. It is preferable that the PM on a design-related project has client-specific design experience and is a PE. Both the EIC and the PM must be thoroughly familiar with the client's overall objectives, QPs, and goals prior to starting the project.

Project personnel assigned to the design effort must be familiar with the overall project scope of work and the task budget assigned to them. They are responsible for achieving the individual design tasks assigned to them and must be capable of completing these tasks. Individual geotechnical design tasks will be managed by senior geotechnical engineering personnel with specific project task assignments (i.e., the task managers make the personnel project task assignments).

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Definitions

Geotechnical Engineering – a practice area of civil engineering dealing with the investigation and engineering evaluation of earth materials, including soil, rock, groundwater, and man-made materials and their interaction with earth retention structures, structural foundations, and other civil engineering works. The practice involves the application of the principles of soil mechanics and earth sciences, and requires the knowledge of engineering laws, formulae, construction techniques, and performance evaluation if civil engineering works are influenced by earth materials.

DESCRIPTION OF PROCEDURE

1.0 General

All BBL-developed design documents that include geotechnical design components must be completed in accordance with applicable federal, state, regional, and local laws, regulations, and codes. In addition to the above, the EIC and the GE will identify applicable reference and guidance documents for the project.

The final design documents must appropriately define and detail the design and the designer's intent/requirements. The design documents must be clear and concise allowing for ease in interpretation of the designer's intent and requirements by the review agency, client, or the contractor. Performance specifications must clearly define the desired performance criteria. The flowchart on the following page presents an overview of the design process involving geotechnical work elements.

2.0 BBL Geotechnical Personnel for Project Team

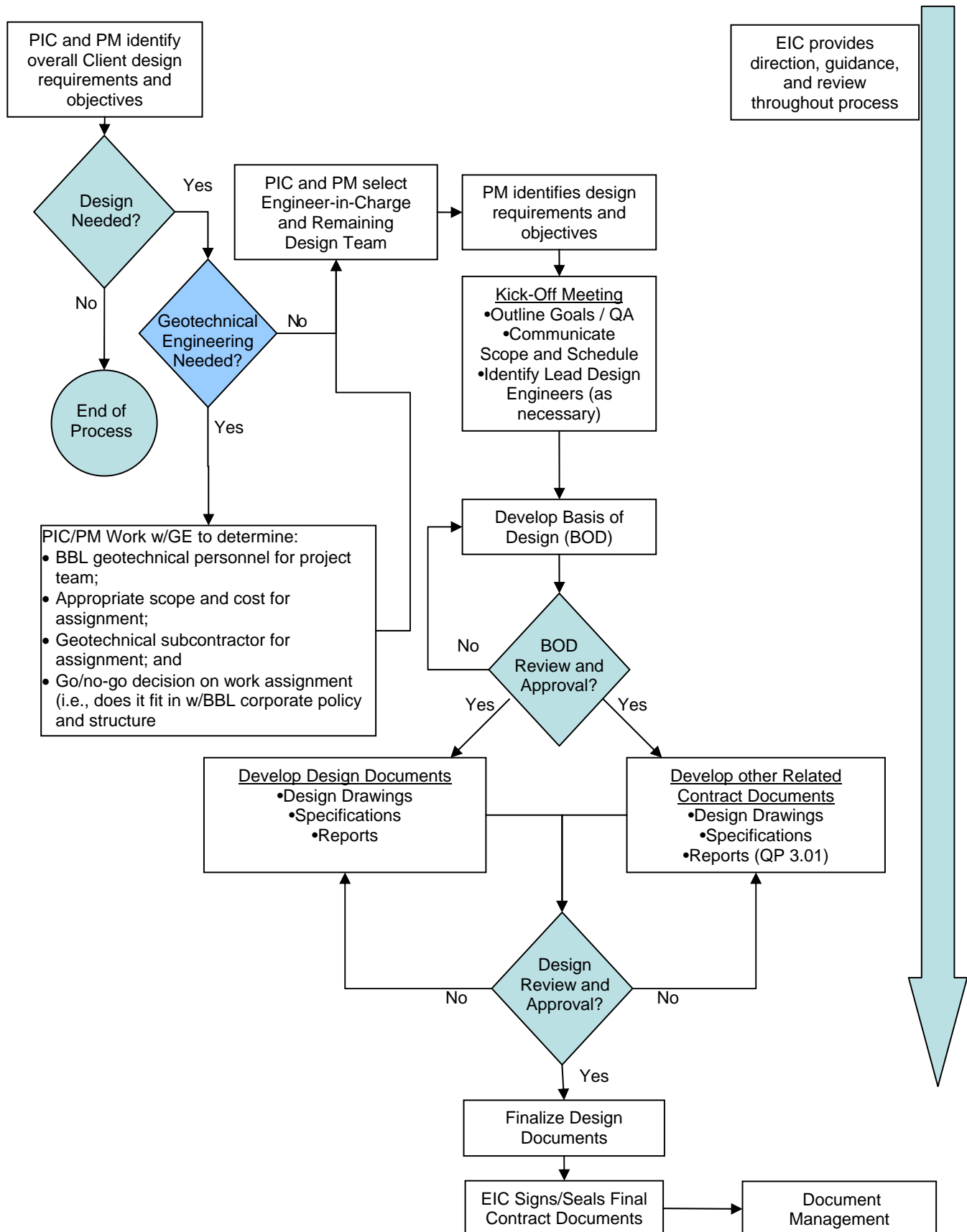
Individual geotechnical design tasks are managed by senior geotechnical engineering personnel with specific project task assignments (i.e., the task managers make the personnel project task assignments).

3.0 Appropriate Scope and Cost for Assignment

To reduce the potential for risk on our projects, BBL's senior geotechnical engineering personnel will assist PICs and PMs develop the appropriate scope and cost estimate for the assignment. For all BBL design-related projects, a Project Plan must be generated and distributed to the entire project team. The Project Plan is the primary document that conveys personnel assignments and responsibilities to the design team. The GE will provide the information for inclusion in the project plan that describes the work assignments and appropriate costs for geotechnical work elements.

4.0 Geotechnical Subcontractor for Assignment

BBL will only use a limited number of pre-approved geotechnical subcontractors for work in specific work areas not presently covered by internal BBL personnel. A short-list of qualified subcontractors will be kept by the Legal Division and updated annually by the Geotechnical Group. The GE assigned to a project utilizing a geotechnical subcontractor will provide direct oversight regarding the selection of the subcontractor and management of the subcontractor during the implementation of their work on the project.



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5.0 Go/No Go Decision on Assignment

If geotechnical engineering is involved in a new work assignment that requires design of foundation elements for new or renovated structures (e.g., design of footings, piles, caissons, stone columns, PIFs), the GE must be consulted prior to acceptance of a new assignment. Based on the relevance of the assignment to the core BBL business strategy and the liability exposure it may cause to BBL, a Go/No Go decision is made by the Geotechnical Group leaders (currently Steve Montagna and Kris Fabian).

Typical geotechnical assignments associated with environmental remediation applications (e.g., soil/sludge stabilization, landfill liners and caps, vertical barrier systems, pavement design, embankment/slope stability, sediment/soil handling/dewatering, earth retaining systems, excavation/ earthwork/compaction recommendations) are acceptable for BBL's geotechnical practice.

For any new geotechnical assignment (whether typical or not), the Geotechnical Group leaders, indicated above, participate in the process to incorporate the appropriate level of effort into the task and to make the proper personnel assignments for completion of those tasks.

6.0 Development of Geotechnical Design Project Calculations

The development of all BBL geotechnical design calculations must be in accordance with QP 3.03 – Preparation of Calculations. Project-related calculations are an important element in the design process, and each project engineer is responsible for preparing and verifying that his/her calculations are independently checked. A peer review of all calculations is required by a senior GE. At a minimum, project engineers maintain and file all relevant calculations.

7.0 Project Review Milestones

Formal verification and technical review during the design process is performed during each phase of the design project. It is the responsibility of the PM to verify that all geotechnical construction specifications represented in a document have been reviewed by the GE who coordinates with representatives of the other disciplines involved. Project-specific specifications from past BBL projects will not be used unless the individual discipline project engineers have confirmed that the reference standards listed in Part 1 of the specification have been recently updated, all references to the past project have been removed, and the entire specification is applicable to the current project. The PM is responsible for scheduling and documenting all design reviews.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____

BBL	TOPIC:		CORRECTIVE ACTION AND PROCESS IMPROVEMENT	QP 4.01
	Revision A (01/13/04)	SECTION:	Quality Assurance Procedure	COMPANY LOCATIONS AFFECTED: All

STATEMENT OF POLICY:

It is BBL's policy that significant deficiencies and non-conformances be identified, documented, and analyzed for the identification of root cause. Appropriate corrective action will be taken on a case-specific basis, and, as necessary, process deficiencies that are identified through corrective action will be evaluated, prevented, and communicated to staff. BBL encourages all employees to utilize this procedure to identify and implement process improvements.

Purpose

The purpose of this quality procedure (QP) is to provide:

- a common process for improving our work products;
- documentation of lessons learned;
- documentation of steps taken to correct and prevent significant deficiencies and non-conformances;
- a mechanism to track corrective action activities until closure; and
- appropriate process improvements that are shared across the organization.

Responsibilities

BBL Management – Managers are responsible for determining what constitutes a significant deficiency or non-conformance and for subsequently resolving those issues that are considered significant. Management encourages all staff to creatively assess our processes in order to identify ways in which these processes can be improved. Management's role for deficiencies or improvement opportunities is defined as, but not limited to:

- Principal in Charge (PIC) – responsible for opportunities related to client-specific activities and ensuring the quality of our client deliverables;
- Project Manager – responsible for opportunities related to project-specific activities and ensuring the quality of project-specific deliverables to our clients;
- QP Champion – responsible for opportunities related to a BBL Quality Procedure; and
- Divisional Officer or Manager – opportunity relates to divisional or management support activities.

BBL Staff – It is the responsibility of all BBL employees to embrace the spirit of corrective action and process improvement, identify opportunities for improvement, and understand the threshold that management assigns to significant deficiencies or non-conformances.

Definitions

Client – For purposes of this procedure, a client is either an internal (employee or business unit) or external (entity paying for services) party.

Corrective action – A formalized measure taken to respond to a specific occurrence and eliminate unsatisfactory and deficient services upon discovery.

Deficiency or a non-conformance – A deviation to a client requirement, either internal or external.

Preventive action – A measure taken that extends corrective action beyond a specific occurrence, when there is the potential that the deficiency or non-conformance could re-occur and become systematic.

Significant deficiency or a non-conformance threshold – The adverse impact on a client (internal or external) as determined by BBL Management if the deficiency is not addressed, corrected, or prevented.

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DESCRIPTION OF PROCEDURE

The corrective action process is implemented in the event that BBL is notified by a client of unsatisfactory or deficient services, or BBL internally discovers a deficiency in its services or an opportunity for improvement. It is a necessary part of this improvement process that all employees contribute to the efficiency or effectiveness of activities or processes that affect our clients, projects, or internal operations.

1.0 Identify Issue or Opportunity

This process begins with any individual identifying a potential deficiency or improvement opportunity.

2.0 Establish Ownership

An appropriate owner (BBL Management) is identified and assumes ownership of the corrective action process.

3.0 Determine Significance

The owner determines the significance and impact of the issue or opportunity that has been identified. The owner must consider how the client (internal/external) is affected by improving the issue, as well as the consequences of not correcting or preventing the situation.

4.0 Define Desired/Expected Result

When a significant deficiency has been identified and documented, the next step in the process is for the owner of the issue to identify the desired or expected result.

5.0 Corrective and Preventive Action

Corrective Action – An immediate short-term remedy is implemented to mitigate impact of the unsatisfactory condition.

Root Cause Analysis – It is necessary to identify which specific tasks and activities contributed to the deficient result in order to effectively improve our activities and processes.

Local Preventive Action – Upon identifying root causes, the issue owner determines activities that the client, project, or improvement team can implement to prevent similar deficiencies in the future.

Global Preventive Action (Quality Assurance) – Upon identifying root causes, the issue owner and the CQM consider how to globally improve human and system capabilities in order to avoid and prevent similar deficiencies. QPs, Standard Operating Procedures, or other guidance is reviewed to identify the potential for implementation of process control(s), and appropriate measures for monitoring improvements are implemented.

6.0 Evaluate Overall Effectiveness

The local and global effectiveness of the preventive action is reviewed at an appropriate point in time following implementation. This review is performed by the issue owner and the Corporate Quality Manager.

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7.0 Close

When evaluation has proven that the action taken has been effective, the corrective action event is closed. The lessons learned (resulting corrective and preventive actions) are communicated and made available to staff.

- END OF PROCEDURE -

Chief Executive
Authorization: _____

Date: _____

BBL	<div> <div>TOPIC:</div> <div>QUALITY ASSURANCE EVALUATION</div> <div>QP 4.05</div> </div>
Revision B (07/23/03)	<div> <div>SECTION:</div> <div>Quality Assurance Procedure</div> <div>COMPANY LOCATIONS AFFECTED:</div> <div>All</div> </div>

STATEMENT OF POLICY:

It is BBL's policy to continuously evaluate and improve our Quality Assurance Program. BBL focuses on three significant areas for evaluation: external assessments through the use of a Client Satisfaction Survey process; internal assessments composed of internal audits, mini-reviews, and self assessments; and Quality Management System Assessment through a formal management review conducted at least annually.

Purpose

The purpose of this procedure is to provide a common process for:

- implementing the Client Satisfaction Survey process;
- evaluating critical activities performed for client programs, projects, and specific project activities;
- performing management review of the Quality Management System.

The type of evaluation for a client program, project, or specific project activity will be determined during the planning stages. All activities that affect clients will undergo this assessment process, including client programs, projects, and specific project activities. Quality assessment evaluations may be conducted by the Corporate Quality Officer (CQO), Corporate Quality Manager (CQM), an independent reviewer (e.g., client, agency, or independent contractor), the Principal in Charge (PIC), or an individual so designated by the CQO, CQM, or PIC.

Responsibilities

Quality Assurance Committee (QAC) – The QAC is responsible for the overall administration of this procedure. For internal assessments, quality assurance personnel will assist PICs and Project Managers (PMs), as necessary, to determine an evaluation approach that is consistent with the project's quality objectives and to perform internal audits as requested.

Client Services Committee (CSC) – The CSC is responsible for administering the Client Satisfaction Survey process and for assisting in the establishment of the QAC's annual goals.

Principal in Charge – The PIC is responsible for the overall direction and implementation of Internal Assessment Activities for activities performed for his/her client. The PIC, or his/her designee, will address appropriate assessment activities on the Client Quality Plan and periodically review these activities for adherence to this procedure.

Project Manager – PMs are responsible for scheduling and budgeting appropriate resources to conduct quality self assessments. Project managers are responsible for participating in project reviews and assigning qualified reviewers. Project managers are responsible for responding to and developing corrective action plans.

DESCRIPTION OF PROCEDURE:

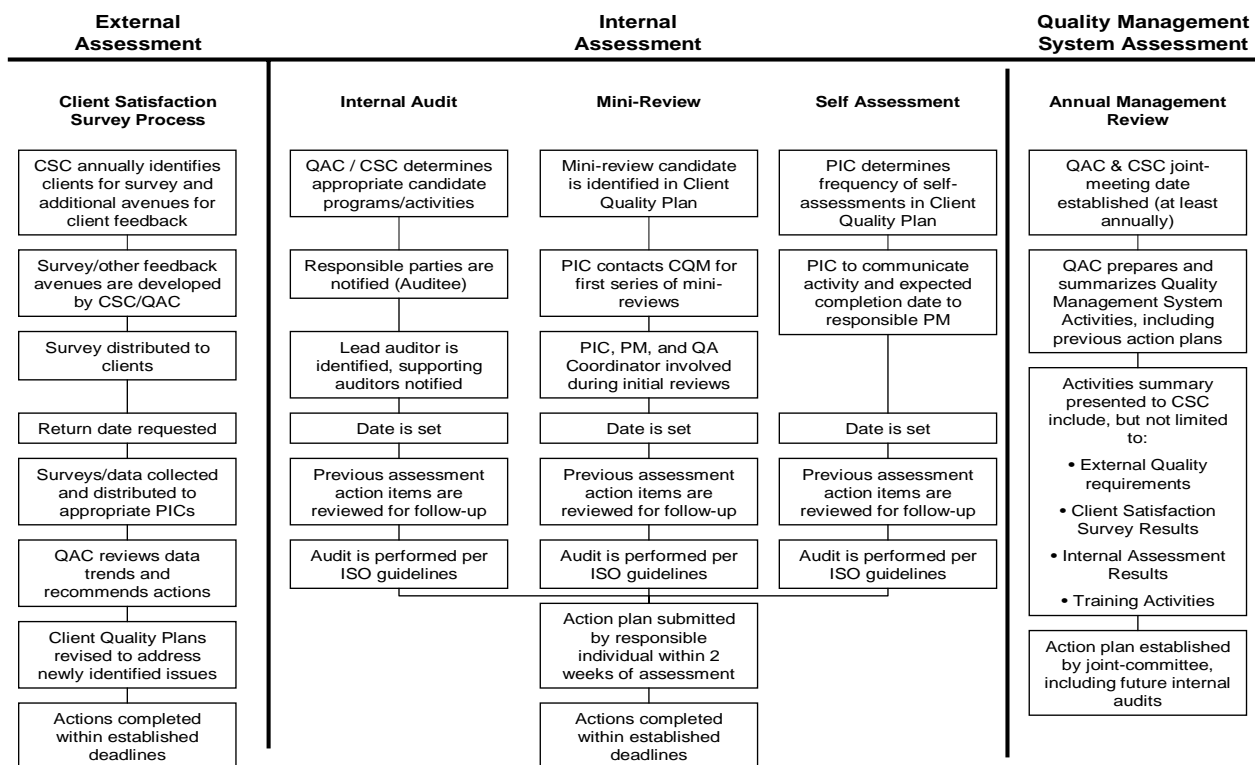
1. Overview

Evaluations will be performed according to this procedure for the purpose of improving the subject program or project activity. Assessments may include an examination of documentation, interviews of project and support participants, and, where feasible, observation of these project and support activities. The mini-review checklist is utilized for all project-related assessments and is available on the corporate Intranet.

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All applicable Quality Assurance Procedures will be used as guidance documents while performing assessments at this level. BBL client- and project-specific procedures, *Project Manager's Handbook* requirements, and *Health & Safety Manual* are also applicable. The PIC or PM may identify additional requirements, standard operating procedures, and other documentation used for measuring project performance.

The common process of quality assurance evaluation is provided in the following flowchart:



2. Client Satisfaction Survey Process

The CSC will annually define an approach to solicit client feedback on customer satisfaction and/or the ability of BBL to meet and/or exceed the client's expectations. The CSC will lead the survey process and establish a method of communication back to the appropriate PIC and client team. Overall trends will also be monitored and communicated back to the CSC and the QAC.

3. Self Assessments

The PIC is responsible for identifying the client program requirements for self assessment activities within the Client Quality Plan. During the planning stages of project activities, each PM is responsible for determining who will assess, what areas will be assessed, and when assessment will take place. Quality assurance personnel may be involved in this decision process. The following criteria are used to determine the scope of a project self assessment:

- client, technical, and regulatory requirements;
- the nature of the deliverables to be produced;
- potential liability associated with the project; and
- potential for external review of deliverables.

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A. Planning

The PM is responsible for project-related quality, and must determine the activities or documents to be reviewed and select the personnel to perform the reviews.

B. Execution and Evaluation

The PM may direct the evaluation of any aspect of a project or program. The evaluation may be conducted by members of the project staff, or by individuals outside of the organization. The general procedure is:

- the PM defines the scope and method of the review;
- the PM selects the reviewers and develops a review schedule;
- designated personnel perform and document the review;
- action items are discussed with appropriate individual(s); and
- the disposition of all comments is reviewed and documented.

When specified action items have been completed, the PM will document the closure of the review and include review records in the project file.

C. Follow-up and Self Assessment Closure

Following completion and verification of corrective action, a closure document will be prepared that indicates that corrective actions have been satisfactorily completed.

4. Annual Management Review

The QAC is responsible for evaluating all aspects of the assessment and survey tools being utilized by BBL. This information will be formally discussed on an annual basis and subsequently presented to the CSC. The QAC and CSC are responsible for establishing annual program goals and guiding the continuous improvement of the program.

- END OF PROCEDURE -

Chief Executive Officer

Authorization: _____

Date: _____